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ABSTRACT

This instructional unit for secondary school students is designed to integrate facts and concepts of energy, environment, and economics into the study of the process of making and applying a law (the fifty-five mile-per-hour speed limit law). The unit contains activities on the legislative process designed to fit into traditional segments of instruction in U.S. history, government, or civics courses. Activities containing learning exercises on constructing and interpreting graphs and tables are suitable for science or mathematics courses. The activities are intended to encourage interdisciplinary teaching. This unit contains complete teacher and student materials including a pre-test, background reading, objectives, teaching strategies, and suggestions for evaluation. (BB)

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Interdisciplinary Student/Teacher Materials in Energy, the Environment, and the Economy

1

How a Bill Becomes a Law to Conserve Energy

Grades 9, 11, 12

SE 024 168

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October 1977

1

How a Bill Becomes a Law to Conserve Energy

Grades 9, 11, 12

National Science Teachers Association
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This instructional unit was produced by NSTA's Project for an Energy-Enriched Curriculum under contract #EX-76-C-10-3841 from the Education Programs Branch, Office of Public Affairs, the U.S. Energy Research and Development Administration (now U.S. Department of Energy). The NSTA project staff is as follows:

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"How a Bill Becomes a Law to Conserve Energy" is the product of a writing session held at the University of Maryland during Summer 1976. The following teachers were the main contributors to this unit:

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August 1977
John M. Fowler
Project Director

How a Bill Becomes a Law to Conserve Energy: A Case Study of How a Bill Becomes a Law

Introduction

The fact that cars use more fuel per mile at high speeds than when they are driven slowly is accepted by most people. This does not mean that everyone understands why (or that everyone drives slowly). That lower speeds not only save money and energy, but can also save lives, protect the environment, and reduce wear and tear on the car itself is often overlooked and seldom understood. The description of all these savings and the basic facts behind them make up the content of the lessons in this packet.

The primary goal of these instructional materials for secondary school students is to integrate facts and concepts of energy-environment-economics into the study of the process of making and applying a law. We have chosen the controversial 55 MPH speed limit because it involves both petroleum, our number one energy source, and the law, our number one way of dealing with a crisis.

Activities on the legislative process designed to fit into traditional segments of instruction in courses in U.S. history, government, or civics are included. Activities containing learning exercises on constructing and interpreting graphs and tables are suitable for science or mathematics courses.

These activities are intended to encourage interdisciplinary teaching. Ideally, we would like to see science teachers and social studies teachers either team up or correlate the teaching of these lessons in their classes. It is not necessary, however, that they be taught in this way. Each activity is designed to be complete and independent and can be used separately in appropriate classes.

Teacher's Manual

This packet contains complete teacher and student materials including a pre-test, background readings, objectives, teaching strategies, and suggestions for evaluation.

A list of the activities, along with a brief summary is as follows:

Activity	Contents	Target Classes
1	Pre-test and Attitude Survey	Social Studies/ Science
2	Case Study of a Bill How the 55 MPH national speed limit became a law. Study of the law-making process.	Social Studies
3	A Congressional Hearing A simulation game for students in which they play typical roles at a hearing on the merits of a national speed limit bill.	Social Studies
4	Does the Speed Limit Save Lives? By constructing and interpreting graphs and tables, the student tests the hypothesis that the speed limit saves lives.	Social Studies
5	How the States Enforce a Federal Law Gives students an opportunity to evaluate how a law affects them as individuals, and as members of a community, state, and nation.	Social Studies
6	Does the Speed Limit Save Energy? Students use data tables to calculate savings in miles per gallon and in dollars.	Science
7	Does the Speed Limit Help the Environment? By How Much? Students can calculate reduction in oil spills and in automotive exhaust emission brought about by the lowered speed limit.	Mathematics

Answers to the PRE-TEST for the 55 MPH Law Case Study

Test items 1-4 are based on the printed matter below. Choose the best answer for each question. Put the letter of that answer in the blank.

Public Law 93-239
93rd Congress, H.R. 11372
January 2, 1974

An Act

To conserve energy on the Nation's highways.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act be cited as the "Emergency Highway Energy Conservation Act."

d 1. Which best describes the reading?
   a. a bill
   b. a House Calendar
   c. a committee hearing
   d. a federal law

c 2. What is the purpose of the Act?
   a. saving lives
   b. saving the environment
   c. saving fuel
   d. paving roads

b 3. Laws are enacted by
   a. the President of the United States
   b. Congress
   c. voters
   d. the Supreme Court

c 4. This Act has a title. What is it?
   a. Public Law 93-239
   b. An Act of Congress Assembled
   c. Emergency Highway Energy Conservation Act
   d. HR 11372

Test items 5-10 are based on the information in the box below. Choose the best answer for each question. Write the letter of that answer in the blank.

EFFECT OF SPEED ON FUEL CONSUMPTION RATES

Test Car Number and Weight (in lbs.)	Miles Per Gallon At Selected Speeds				
	30	40	50	60	70
1 (2,400)	22.74	21.94	22.22	21.08	17.21
2 (4,800)	17.12	17.20	16.11	14.92	13.13
3 (3,500)	19.30	18.89	17.29	15.67	13.32
4 (5,250)	18.33	19.28	15.62	14.22	12.74

c 5. What is this form of presentation called?
a. a case study
b. a graph
c. a table
d. a simulation

b 6. What does this information show?
a. The number and weight of cars in the United States.
b. Miles per gallon for different cars at various speeds.
c. How fast some cars can go.
d. Heavier cars consume less fuel at all speeds.

b 7. Which car had the highest gasoline consumption at 40 MPH?
a. Car 1
b. Car 2
c. Car 3
d. Car 4

d 8. Which car had the highest gasoline consumption at 70 MPH?
a. Car 1
b. Car 2
c. Car 3
d. Car 4

b 9. How are the numbers in miles per gallon related to the consumption of gasoline?
   a. The higher the miles per gallon number, the higher the gasoline consumption per mile.
   b. The higher the miles per gallon number, the lower the gasoline consumption per mile.
   c. The number of miles per gallon is not related to the gasoline consumption.

d 10. For what change of speed did the greatest increase in fuel consumption occur for all test cars?
   a. Between 30 and 40 MPH
   b. Between 40 and 50 MPH
   c. Between 50 and 60 MPH
   d. Between 60 and 70 MPH

Test items 11-17 are general questions on laws and the legislative process. Choose the best answer for each question. Write the letter of that answer in the blank.

b 11. The first Congress met for a two year term in 1789. Each two years thereafter the Congress is given a new number. What is the number of the Congress which met in 1976?
   a. 95th
   b. 94th
   c. 92nd
   d. 93rd

a 12. Which of the following is often called "The House"?
   a. The House of Representatives
   b. The Senate
   c. The Congress
   d. the Home of the President

c 13. To become a law a bill must
   a. start first in the House of Representatives.
   b. start in the Senate.
   c. pass both houses of Congress and be signed by the President.
   d. pass both houses of Congress without amendments.

b 14. Who has the burden of enforcing a law such as P.L. 93-239?
   a. Congress
   b. the President
   c. the people
   d. the Congressman who introduced the bill

b 15. A proposed law is called a
a. treaty
b. bill
c. veto
d. hearing

a 16. If the President of the United States decides that a certain law should be passed, how can he get Congress to act on it?
a. He can suggest laws to Congress in his State of the Union Message.
b. He can appoint Congressmen who will follow his wishes.
c. He can hold a Congressional hearing.
d. He can ask that the proposed law be given more than three readings in each house of Congress.

c 17. What is the word that means that both sides settled their differences by giving in a little to each other?
a. treaty
b. federalism
c. compromise
d. citizenship

Test items 18-25 are general questions about the nature of energy use. Put the letter of the best answer in the blank.

c 18. Which of the following has little or no effect on the amount of gas a car consumes per mile?
a. weight of the car
b. speed it is driven at
c. brand of gasoline it uses
d. horsepower of its engine

b 19. The amount of oil which we import each year is
a. decreasing each year.
b. increasing each year.
c. provided mostly by Canada.
d. coming mostly from Alaskan wells.

d 20. Which of the following would NOT be considered when we talk about energy supply?
a. The amount of a resource already discovered and known.
b. Whether it can be extracted with present methods.
c. How much it costs to extract it.
d. Past patterns of consumption.

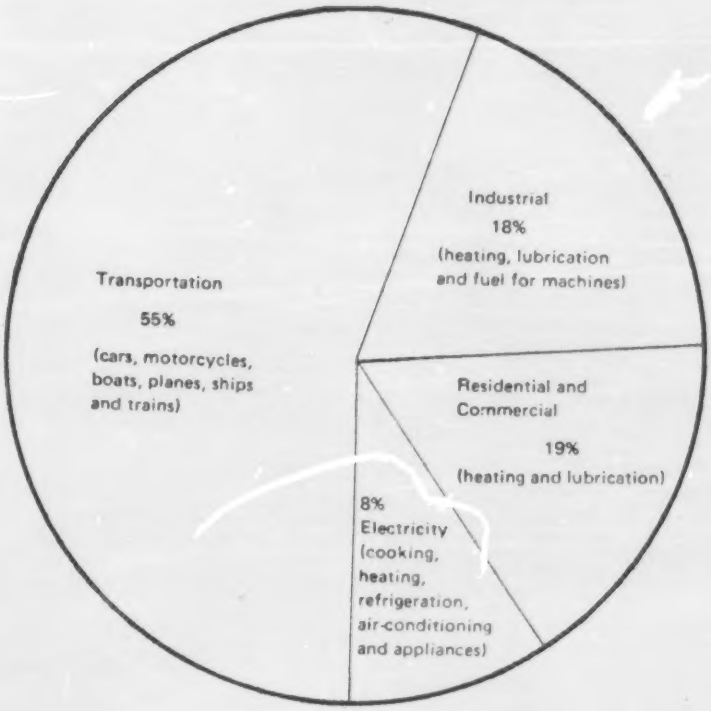
Read the information in the box, then put T in the blank before each test statement that is true of the United States oil policy during the two years 1971-1973. Put F if the statement is false.

> In 1971, we used 5.5 bbl. of oil. We produced 4.1 bbl. from our own wells and imported 1.4 bbl. to meet our needs.
>
> In 1973, we used 6.3 bbl. of oil. We produced 4.0 bbl. from our own wells and imported 2.3 bbl. in that year.

21.
F We increased our domestic production of oil over two years.
T We increased our demand for foreign oil.
T We continued to import oil.
F We cut back on the amount of foreign oil.

Look carefully at the pie diagram below. Choose the best answer for each test item. Write the letter of that answer in the blank.

Major Users of Oil Supplies, 1971
Total Supply = 5.5 Billion Barrels

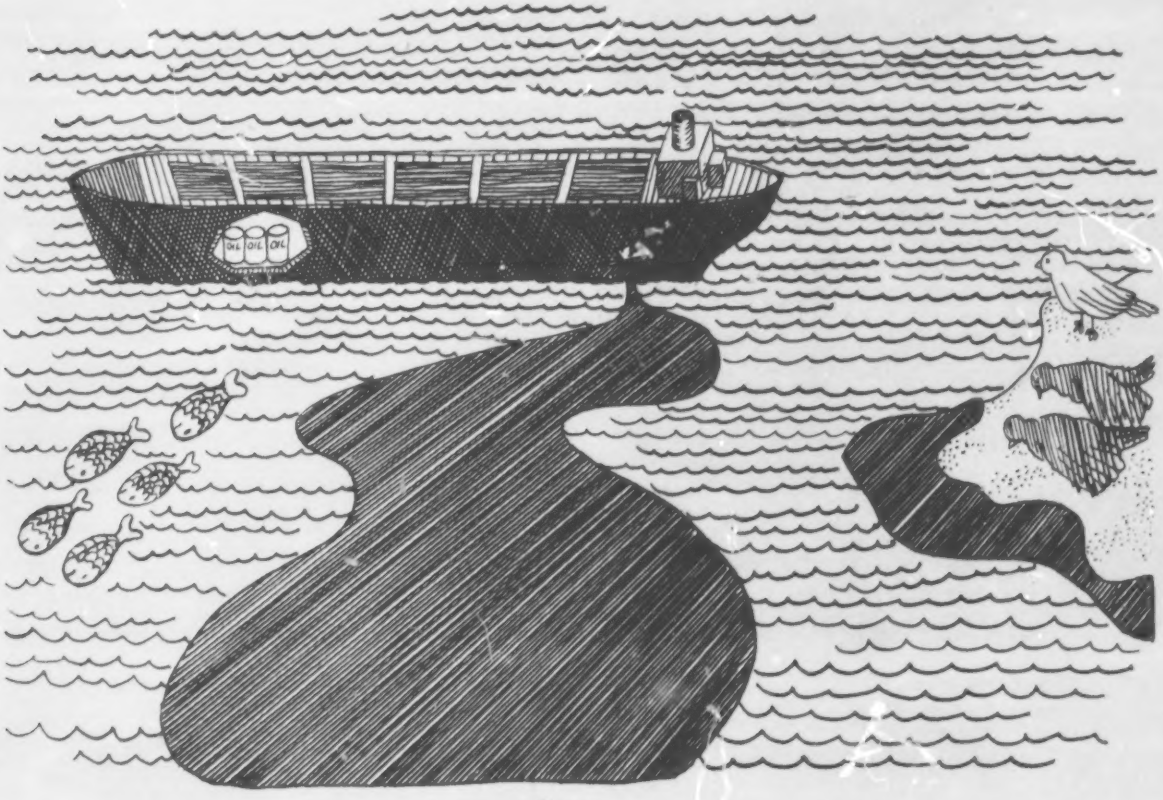


b 22. Which user has the greatest dependency on oil?
   a. Industry
   b. Transportation
   c. Residential and Commercial
   d. Electricity

b 23. The information on this diagram shows
   a. the part of every tax dollar that is spent for Americans' energy needs.
   b. the categories for fuel consumption in the United States.
   c. how much oil the United States imports each year.
   d. the environmental effects of oil use.

c 24. In 1971 Americans consumed 5.5 billion barrels of oil. How many barrels were used in transportation?
   a. 0.5 bbl. (billions of barrels)
   b. 1.1 bbl.
   c. 3.0 bbl.
   d. 1.2 bbl.

Look at the picture, then decide whether these statements are true (T) or false (F).



11

T 25. Oil spills affect coastal waters even more than deep ocean waters.

T 26. An oil spill means money lost to someone.

T 27. The picture shows energy is being transported.

T 28. A national speed limit could have an effect on what is shown in the picture.

T 29. It takes energy to transport energy.

T 30. Conservation of gasoline would mean we would have to import less oil.

Choose the best answer for the following question.

d 31. Reduce the average speed of automobiles and you will reduce all the following EXCEPT
a. the need for tanker ships of oil from other places
b. the amount of pollutants in the air
c. the number of highway deaths
d. the need for automobile factories

1. Does Speed Make a Difference? Parts A and B

Overview

Part A of this introductory lesson encourages students to survey their attitudes towards laws in general, and a speed limit law in particular.

Part B introduces the concept of public support - something every government must have in order to survive. The advertisement performs a public service, since it is sponsored by the U.S. Department of Transportation, the Advertising Council, and a local newspaper.

This lesson can be used as an informal assessment of the students' ability to acquire, process, and report information from two sources.

Objectives

Students should be able to:

1. analyze and evaluate opinions and statements-of-fact.
2. state three ways in which slower driving helps people.
3. list some questions that would have to be answered before evaluating a law as a good law.

Materials

Class copies of Student Survey, page 69 Student Manual.
Class copies of the advertisement and set of questions, pages 71-72 Student Manual.

Suggested Time

1 class period

Teaching Strategies

Part A. Distribute copies of the Student Questionaire. Have students mark their responses. Discuss with the class the major areas of agreement and disagreement.

Part B. Have students look carefully at the advertisement, "A Sign of the Times." A way to begin the discussion is to ask:

4. Suppose you were asked to investigate whether the claims in the ad were true. What additional information would you need for the following statements:

   a. The 55 MPH speed limit saves millions of gallons of gasoline.

      To investigate the claim that the 55 MPH speed limit saves millions of gallons of gasoline you would need to know:

      The fuel consumption for cars, operating at various speeds.
      The average number of miles traveled per car in a day.
      The number of cars in the U.S.

   b. The 55 MPH speed limit saves thousands of lives on the highway each year.

      To find out if the speed limit saves lives you need to know the number of traffic fatalities nationwide before and after the law became effective.

5. How does enforcement give a law a chance to work?

   Enforcement of any law seems to reflect more on the condition of mankind than it does on the rightness of a law. People tend to obey a law if they are forced to. To see if a law can do the things it says it will do, people have to give it a chance. Enforcement permits people to have that opportunity.

At this point, you may wish to introduce the packet on the legislative process by which an idea becomes a bill, and a bill becomes a law.

You may also wish to use the Pre-test at this time. The test may be administered in a Post-test at the end of the activity packet.

The speed limit sign. It says 55 miles an hour. And it says it for some very good reasons. Like saving millions of gallons of gasoline and thousands of lives on the highways each year. But you know these reasons already. Everybody from the oil companies to the insurance companies have been talking about them for better than two years now. And some of you have been listening. Because some of you have slowed down. But there are still an awful lot of people who seem to think the 55 mph speed limit is something they can take or leave. It isn't. It's a law. With tickets and fines and all the rest. Just like any other law. And just like other laws, it can do a lot of positive things. But it's enforcement that gives a law a chance to work. The 55 mph speed limit is a sign of the times. And for the times. And it's something we've got to start paying attention to. Not just because it's a good idea. But because it's the law.

Sign of the times.

It's not just a good idea. It's the law.

A public service of this newspaper. The U.S. Department of Transportation and the Advertising Council.

Who sponsored this ad? What does this sponsorship tell you?

Have you seen other ads trying to get people to help themselves? Can you think of some examples?

Besides advertising, what else would encourage people to slow down on the highways?

Following this brief discussion, have the students answer the questions concerning the advertisement, Student Manual page 71

Answers to Student Questions

1. The purpose of most ads is to sell something. What is the advertisement selling?

This particular ad, like most public service ads, is selling safety, citizenship, and cooperation for the good of others. It is saying something important about energy, too.

2. List two statements from the ad that are meant to convince people to drive slower.

a. ..."saving millions of gallons of gasoline ...each year."

b. "(saving) thousands of lives on the highways each year."

c. Others that could be mentioned are the fact that the speed limit is the law; that it (the law) is something we've got to obey in order to save energy.

3. Compare the message in the advertisement with the statements on the Student Survey. Which statements on the Survey are supported by the ad? Write the supporting statements in the space below.

Statements in the ad that compare favorably with the Student Survey:

Millions of gallons of gas can be saved each year if people drive more slowly. Driving more slowly can save thousands of lives each year. The 55 MPH speed limit is a good law.

2. How a Bill Becomes a Law: A Case Study

Overview

This activity develops the students' understanding of how our laws are made. It focuses on how the idea of a 55 MPH national speed limit became a law to give students a concrete example of the steps involved in any piece of legislation. Students studying the institution of government, such as: 8th grade history, civics, current issues courses, or Problems of Democracy will find this activity worthwhile.

Objectives

At the completion of this activity students should be able to:

1. identify the major factors that influence the passage and/or modifications of legislation.
2. demonstrate an understanding of the lawmaking process.
3. evaluate a law as an example of good law.

Materials

Class sets of student reading: How A Bill Becomes A Law: A Case Study

Suggested Time

2-5 class periods for completing Activities 1 and 2.
5-8 class periods for Activities 3, 4, 5, and 6.

Teaching Strategies

Introduce the lawmaking process by asking some motivational questions to perk up some interest. One way to begin is to ask:

What is the difference between a bill and a law?

A bill is a proposed law. Any member of either house of Congress may introduce a bill. A law is the final step in the lawmaking process.

Can you name some laws that affect you?

Students should be able to name some broad categories of laws that affect their daily lives.

Laws concerning: Education, child labor, regulation of businesses, immigration and passport laws, laws to raise money from taxes on liquor, gasoline, income, highways, etc.

Note: As the students suggest many of the laws that affect them directly, you might help them distinguish between federal powers, state powers, and concurrent or shared powers. Unless a power is forbidden to the states by the Constitution, state governments may exercise that power. A good example of concurrent power is the power of taxation. Both the federal government and the state government have the power to tax. Powers are exerted through laws.

Do you know of any bills being considered by Congress this year?

Students can probably think of many such proposed laws: civil rights, health and welfare, tax bills, space research, foreign aid, Veteran's benefits, national defense - these and many more will come to mind.

Do all bills become laws?

Each year the Senate and the House of Representatives consider thousands of bills. Every bill must be passed in identical form by both houses of Congress before it is signed by the President and becomes a law. A few hundred bills survive the slow (some say a glacier moves faster than Congress), deliberative process. You may want to point out that perhaps this slowness is good. If every one of the some 18,000 bills considered each year became a law, we would be the most law-ridden society on earth.

Where do the ideas for bills come from?

Ideas for bills come from five main sources:

1. *Any American citizen.*
2. *Organized groups, such as labor or veteran organizations.*
3. *Committees of Congress, especially arising out of investigative committess.*
4. *Members of Congress. Congressmen often become experts in certain fields, such as agriculture, mining, urban housing, among others.*

5. *President of the United States. Many ideas come from the President's State of the Union address he makes each year before the two houses of Congress. In this speech, the President recommends the laws he believes are needed to improve our nation's well-being. Many of these ideas are soon introduced as bills by members of Congress.*

Sections A and B of Case Study

Have Students read sections A and B of the case study of how a bill becomes a law in the Student Manual, writing their answers to the questions at the end of section B.

Answers to Student Questions

1. Which statement tells you that public opinion is important in proposing a law?

Several sentences suggest that public opinion is important in proposing a law. Perhaps the best is: When enough Americans become concerned about a problem, they usually write to their Representative or Senator.

2. How does a "crisis" or emergency influence the making of a law?

Americans become informed by newspapers, TV, radio, their neighbors, and in other ways about remote events that link our lives. These events are often called emergencies or crises. They raise our fear and they generally blend people together toward support for action. Something important happened to our country in October 1973. The OPEC nations of the Middle East put an embargo on oil shipments. This event brought the role of oil in our lives sharply into focus. These few months brought vast changes in the lives of all Americans, some of which are yet to be felt. Hence, the crisis resulted in increased support for less wasteful energy use. One energy conservation measure mentioned conserving fuel during periods of fuel shortages through the establishment of a maximum highway speed limit. To encourage this conservation a law would have to be passed.

3. Who introduces a bill?

While ideas can come from many sources, only

Congressmen or Senators write bills. Generally, members of Congress have legislative aides who help them put their thoughts into legislative language.

Note: You might wish to introduce additional questions at this point, such as:

Why didn't the President order a 55 MPH speed limit for all vehicles?

He did not make such an order primarily for two reasons:

1. *Public outcry over the reality of the crisis, and*
2. *Economic as well as psychological reasons for exceeding a speed limit. Truck drivers felt the slower speed would cost them more money in longer driving time and more gas. Long-haul trucks engaged in delivering fuel and other essential supplies would be given a harder knock than cars.*

Do people influence Congress as individuals, or do they exert more influence as a group?

The people are a powerful force. They can influence legislation either way. Students may find it suprising to learn how influential one person can be. This may be a good time to introduce the concept of participatory democracy. Have each student choose some current issue, such as the addition of a national park to your state. Each student may then write a letter to a Representative urging him or her to vote on the issue. Have the student keep track of the legislation to see if the bill becomes a law.

Section C of Case Study

This section focuses on the case study of the 55 MPH Speed Limit bill to show the lawmaking procedures. The procedures, of course, are in keeping with the Constitution. Each bill must go through certain steps.

Have students write out the answers to the questions. Later, you may want to discuss the responses in class.

4. What is the work of committee members at a hearing?

Each committee studies and discusses as many bills as it can. Each house has a number of regular, or standing, committees. From time to time both houses add more committees.

When committee members have made up their minds about a bill they write a report. The bill, with the committee's reports, favorable or unfavorable, is then sent back to wherever it started. It is placed on the calendar and scheduled for consideration by the entire chamber.

5. What may have been some of the reasons for inviting the following groups to appear at the hearing on the speed limit?

a. the Trucking Associations?
b. the Department of Transportation?
c. interested citizens?

At hearings individual citizens or groups can appear to give their views. These witnesses testify for and against the bill. These witnesses help to give the committee members the information they need in order to recommend that the bill be accepted, rejected, or perhaps changed.

In the case of HR 11372, the representatives of the Trucking Industry pointed out that the slow down speed would single them out for they would lose money in haul time and in the dollars they would have to pay for gasoline because trucks operate more efficiently at speeds higher than 50 MPH. (This would be a good time to ask students to investigate these claims of the truckers. Information can be found in Activity 4 of this packet.)

On the other hand, supporters of the bill - interested citizens and the Department of Transportation - pointed out that the slower speeds would save money, lives, energy, and the car itself.

6. How does the federal government plan to punish any state that falls behind in enforcing the speed limit law?

The federal government will insist on compliance from the states by withholding federal highway construction funds from states that do not enforce the lower speed limit. (Students might like to discuss whether they think this smacks of blackmail or is simply doing the unpleasant, though necessary, thing.)

7. When do the three readings of the bill occur?

The <u>first</u> reading occurs when the Speaker of the House (or, if the bill originated in the Senate, when the President of the Senate) reads the title of the bill to the House before sending it to the appropriate committee. The <u>second</u> reading occurs after the bill has been debated.
The <u>third</u> reading is usually by title only, occurring before the vote is taken.

8. What is meant by "the bill was placed on the calendar?"

The <u>calendar</u> is the schedule that lists the order in which the bills are to be considered. Of course, in a real emergency a bill can be moved up on the calendar, and early action taken. HR 11372 was moved up. The energy crisis had become more and more visible.

9. What is a rider?

A <u>rider</u> is a provision that is attached to an important bill, thus hitchhiking or riding through on the strength of the more important bill.

10. Sometimes in signing a bill the President uses many pens which are given to supporters of the bill. Can you list some of the persons who might be given a pen for P.L. 93-239?

Persons most interested in getting a particular bill passed often are invited to witness the signing of the bill into law. Souvenir pens for P.L. 93-239 probably went to Respresentatives, Senators, representatives from the Department of Transportation, and others. (Students will have better success with this question, if they had taken part in the simulation of a congressional hearing first. The simulation is a part of this package.)

11. Follow HR 11372 through all the steps on the flowchart of "How A Bill Becomes A Law" which is included at the end of this packet. How long do you think each step might have taken?

Students may need to see the chronology of the bill on the last page of this section. The bill took one and a half months, a remarkably short time.

12. How easy is it for a bill to become a law?

Congress has been called the great deliberative body. This bill, unlike most, sped through the process. The long and involved process of making laws may be slow. However, it prevents hasty legislation while providing a way for the government to pass laws needed to assure the well-being of all Americans.

13. How do the two laws differ? List the differences between P.L. 93-239 and P.L. 93-643 after looking over the provisions of each on the next page. (Page 80, Student Manual.)

The main difference lies with the fact that P.L. 93-239 was a temporary measure. It was to cease as law on or after the date on which the President declared there was not a fuel shortage. Or end after June 30, 1975, whichever came first.

14. Explain the kind of coding system the government uses to help keep track of laws. What do the following numbers mean?

a. 93?
93 refers to the 93rd Congress. A Congress is comprised of two legislative sessions, or two years.

b. 239?
239 reflects the number of laws passed in a year. There have been 239 laws. The next will be numbered 240, and so on.

c. 643?
643 is the number of laws passed in the second session of the 93rd Congress. Next law will be numbered 93-644, and so on.

15. Describe the work of a conference committee.

A conference committee is made up of an equal number of Senators and Representatives. It meets to try to reach an agreement on a bill. An agreement will probably involve a compromise. Usually both houses approve the work of their conference committee and pass the bill.

After the students have finished the case study questions, you might ask if they think the 55 MPH Speed Limit is a good law. Why or why not? What further information would you need to help you decide?

If the interest and time allotments permit it, you will find the hearing simulation (Activity 3) useful at this time. It is a self-contained unit with all pertinent information packaged separately for your convenience.

Activities 4-6 follow a natural sequence. These activities permit students to examine charts and graphs to help them decide for themselves whether the speed limit saves energy, money, and lives. At the end, the students can evaluate the 55 MPH law as an example of a good law.

3. A Simulation Game Hearing Before the Subcommittee on Transportation of the Committee on Public Works, United States Senate

Overview

This simulation of an actual hearing is intended to inform students that in order to have the information it needs to enact its proposals into law, Congress must gather facts and conduct investigations. The subcommittees in both houses do a great deal of the work in the field of investigation. Most of the investigations have to do with preparing legislation. They rest on the right of Congress to collect any and all information that will aid it in enacting laws.

At first you may be tempted to think the role playing may take too much time. Perhaps the hearing, indeed the whole legislative process seems both laborious and frustrating. It is, but this is ultimately a good thing, as it demonstrates the actual process.

Freedom requires much restraint. Restraints are the purpose of law. The most effective of all restraints against bad laws is found in the process itself. Learning the value of restraint may be the most positive aspect of this education packet.

Objectives

At the completion of this activity students should be able to:

1. describe the purpose of a hearing and the ways groups of citizens try to influence lawmakers.
2. explain why it is that a law is often different from the bill that was introduced in a house of Congress.
3. evaluate data and information to validate observations or explanations.
4. show respect for the ideas of others.

Materials

*Three discrete packets for students:
a. Procedural Instructions for Senators Packet
b. Procedural Instructions for Senate Staff and Press Packet
c. Procedural Instructions for Witnesses' Packet

These packets contain role cards, a description of the purpose of the hearing, the protocol to be followed, and specific directions for procedure.

*Role Choice Cards, to cut out.

*This manual for teachers and students.

Suggested Time

3-5 class periods

Teaching Strategies

ONE DAY BEFORE THE HEARING:

1. You will need some lead-time preparation before introducing the hearing, depending on how you would like to use the simulation: as a part of Activity 2, or as a separate activity. If you choose the latter, you will need some brief background information on the purpose of the hearing.

Background Information

The House of Representatives proposed and held hearings on HR 11372: The Emergency National Maximum Highway Speed Limit bill. The bill was voted on and passed by the House on November 29, 1973.

The legislation required the establishment of a uniform maximum speed limit of 55 MPH on all highways. The Governors of the various States were given the responsibility for enforcing the new speed limits. The Secretary of Transportation was given the power to eliminate any further highway projects in states that did not enforce the new national speed limit. The terminal date of the proposed law was June 30, 1975, or the date on which the President declared that there is no longer a fuel shortage, whichever came first.

The House bill was sent to the Senate where it was referred to the Committee on Public Works. The committee referred the bill to the Subcommittee on Transportation. It is this Senate Subcommittee on Transportation that the students roleplay.

2. Ditto class copies of the Handout called Purpose of the Senate Hearing. This sheet of paper has an explanation of the protocol to be followed as well.

3. Ditto copies of the role cards. Cut and separate each one.

4. Ditto special instructional sheets for three groups. You will need approximately 40 copies of the Handout, 6 copies of each Senator's instruction sheet, 10 copies of the Witness instruction sheet, 7 copies of the Senate Staff and Press sheet.

5. In addition to the instruction sheets, ditto copies of the evaluation questions and copies of the final bill. You will need approximately 40 of each of these.

6. Cut out the 23 choice cards and have students choose their roles, picking them from a hat. If necessary, you may eliminate some of the roles, but you should have, at the very least: four Senators, six Witnesses, three Senate Staff, and two members of the Press.

Role "Choice" Cards

SENATOR	SENATOR
SENATOR	SENATOR
SENATOR	SENATOR
WITNESS	WITNESS
WITNESS	WITNESS
WITNESS	WITNESS

Role "Choice" Cards

WITNESS	WITNESS
WITNESS	WITNESS
PRESS	PRESS
PRESS	PRESS
SENATE STAFF	SENATE STAFF
SENATE STAFF	

DAY OF THE HEARING

1. One approach to introducing the simulation is to ask students if they would like to be a Senator for a day. You might begin: What are the rewards Representatives may expect from their services in Congress? What are the demands on their time?
   How would you like to prepare and present a Congressional hearing - we could videotape it - where you appear at a hearing to speak for and against a bill? Some of you will play the role of Senators. We will need witnesses and members of the television and news media. We will need others to roleplay Senate Staff members.

2. Select the roles. Try to avoid choosing natural leaders for the various positions by choosing at random. This is the purpose for the role choice cards.

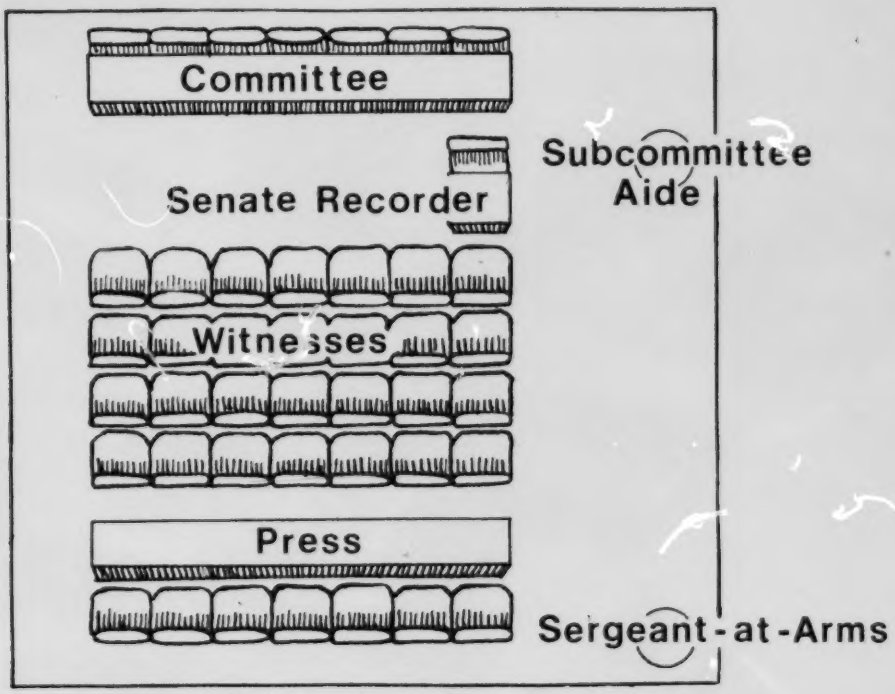
3. After the students have chosen their roles, you should distribute the Handout. Go through the purpose and protocol steps so they will be fully briefed.

4. Divide the class participants into meeting areas: Senators in one part, witnesses and staff in other areas. Distribute procedural instructional packets to the appropriate groups. The packets are:
   a. Procedural Instructions for Senators
   b. Procedural Instructions for Witnesses
   c. Procedural Instructions for Senate Staff and Press

5. Assist Senate Staff and the Sergeant-at-Arms in rearranging the classroom for the hearing and acquiring special furniture and flags for color and ambiance.

SENATE HEARING ROOM

1. Committee
2. Senate Recorder
3. Subcommittee Aide
4. Witnesses
5. Press
6. Sergeant-at-Arms



SENATE HEARING ROOM

Evaluation

The following questions may be used to guide a discussion about the ideas presented in the simulation.

1. What were the purposes of the witnesses in the hearing?

2. What was the grievance(s) of the truckers?

3. What were the problems and advantages of following strict time rules and protocol?

4. Why did the relationship between constituents'

special interests for their state and national interests lead to conflict for the Senate?

5. What do you think of having hearings filmed for television and open to the public? What bearing might openness have on the decisions of Congressmen?

Summing Up and Review

A copy of P.L. 93-239: The Emergency Highway Energy Conservation Act can be found on the next page. For distribution to the class, make two-sided copies of that page. Then fold each sheet in half, so the first page of the bill is face up. You will then have copies which are very similar in appearance to the original bill.

A copy of P.L. 93-239: The Emergency Highway Energy Conservation Act is included in this packet. Make a class set of copies, and distribute them to the students.

Ask students to evaluate the influence of the hearing testimony on the final form of the bill. Does the hearing procedure help make laws most representative of the wishes of the people? How does the hearing protect the people from hasty and ill-considered laws?

Extending Your Knowledge

KNOW YOUR CONGRESSMAN

1. Write the names of your Senators and Representatives.

2. Keep a record of the activities of your Representatives and Senators - particularly on bills before Congress.

3. Make a record of the committees on which your Congressmen serve. What issues before these committees are of special interest to the people of your community?

4. Write the biography of one of your Senators or your district Representative, describing the path by which he or she reached Congress.

5. What Constitutional requirements do Representatives have to meet? How do Senatorial requirements differ? (See Art. 1, sec. 2 and 3 of the Constitution of the United States.)

Public Law 93-239
93rd Congress, H.R. 11372
January 2, 1974

An Act

To conserve energy on the Nation's highways.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act be cited as the "Emergency Highway Energy Conservation Act." Emergency Highway Energy Conservation Act.

SEC. 2. (a) The purpose of this section is to conserve fuel during periods of current and imminent fuel shortages through the establishment of a national maximum highway speed limit.

(b) After the sixtieth day after the date of enactment of this Act, the Secretary of Transportation shall not approve any project under section 106 of title 23 of the United States Code in any State which has (1) a maximum speed limit on any public highway within its jurisdiction in excess of 55 miles per hour and (2) a speed limit for all types of motor vehicles other than 55 miles per hour on any portion of any public highway within its jurisdiction of four or more traffic lanes, the opposing lanes of which are physically separated by means other than striping, which portion of highway had a speed limit for all types of motor vehicles of 55 miles, or more, per hour on November 1, 1973, and (3) a speed limit on any other portion of a public highway within its jurisdiction which is not uniformly applicable to all types of motor vehicles using such portion of highway, if on November 1, 1973, such portion of highway had a speed limit which was uniformly applicable to all types of motor vehicles using it. A lower speed limit may be established for any vehicle operating under a special permit because of any weight or dimension of such vehicle, including any load thereon. Clauses (2) and (3) of this section shall not apply to any portion of a highway during such time that the condition of the highway, weather, an accident, or other condition creates a temporary hazard to the safety of traffic on such portion of a highway. National maximum speed limit. 72 Stat. 892; 84 Stat. 1717, 1737. 87 STAT. 1046 87 STAT. 1047

(c)(1) For the purposes of this section the terms "highway" and "State" shall have the same meanings as in section 101 of title 23, United States Code. Definitions. 72 Stat. 885; 74 Stat. 415.

(2) As used in this Act, the term "motor vehicle" means any vehicle driven or drawn by mechanical power manufactured primarily for use on public highways, except any vehicle operated exclusively on a rail or rails.

(d) Notwithstanding the provisions of section 120 of title 23, United States Code, sums apportioned to any State under section 104 of title 23, United States Code, shall be available to pay the entire cost of any modification of the signing of the Federal-aid highways for which such sums are apportioned within such State due to a reduction in speed limits to conserve fuel if such change in signing occurs or has occurred after November 1, 1973. 72 Stat. 899; 84 Stat. 1731. Ante, pp. 254, 256, 257, 292.

(e) This section shall cease to be in effect (1) on and after the date on which the President declares that there is not a fuel shortage requiring the application of this Act, or (2) on and after June 30, 1975, whichever date first occurs. Termination date.

(f) The requirements of this section shall be deemed complied with by administrative action lawfully taken by the Governor or other appropriate State official that complies with this section.

Carpools, demonstration projects.

SEC. 3. (a) To conserve fuel, decrease traffic congestion during rush hours, improve air quality, and enhance the use of existing highways and parking facilities, the Secretary of Transportation is authorized to approve demonstration projects designed to encourage the use of carpools in urban areas.

(b) Proposals shall be originated by local officials and submitted by the State in accordance with the provisions of section 105(d) of title 23, United States Code. The Secretary of Transportation shall approve for funding those projects which offer reasonable prospects of achieving the objectives set forth in subsection (a) of this section.

Ante, p. 255.

(c) A project may include, but not be limited to, such measures as systems for locating potential riders and informing them of convenient carpool opportunities, designating existing highway lanes as preferential carpool highway lanes or shared bus and carpool lanes, providing related traffic control devices, and designating existing publicly owned facilities for use as preferential parking for carpools.

(d) A project authorized by this section shall be subject to, and carried out in accordance with all of the provisions of chapter 1 of title 23, United States Code, applicable to highway projects, except that the Federal share of such project shall be 90 per centum, the Federal share shall not exceed $1,000,000 for any single project, and only funds apportioned under section 104(b)(3) and (6) of such title shall be available to carry out projects authorized by this section. The Secretary shall not approve any project under this section after December 31, 1974.

72 Stat. 885; Ante, p. 261. 23 USC 101. Federal share.

77 Stat. 276; Ante, p. 256. Termination date.

(e) The Secretary of Transportation shall conduct a full investigation of the effectiveness of measures employed in the demonstration projects authorized by subsection (a) of this section. In addition, he shall, in cooperation with the Internal Revenue Service, the Environmental Protection Agency, and other appropriate Federal and State agencies, study other measures, including but not limited to tax and other economic incentives, which might lead to significant increases in carpool ridership in urban areas throughout the country, and shall identify any institutional or legal barriers to such measures and the costs and benefits of such measures. He shall report to the Congress not later than December 31, 1974, his findings, conclusions, and recommendations resulting from such investigation and study. Funds authorized to carry out section 307 of title 23, United States Code, are authorized to be used to carry out the investigation and study authorized by this subsection.

87 STAT. 1047
87 STAT. 1048
Study.

Report to Congress.

72 Stat. 913; Ante, p. 276.

SEC. 4 Section 601(d) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1421) is amended to read as follows:

84 Stat. 1619, 1705.

"EMERGENCY LOCATOR TRANSMITTERS

"(d)(1) Except with respect to aircraft described in paragraph (2) of this subsection, minimum standards pursuant to this section shall include a requirement that emergency locator transmitters shall be installed—

"(A) on any fixed-wing, powered civil aircraft for use in air commerce the manufacture of which is completed, or which is imported into the United States, after one year following the date of enactment of this subsection; and

"(B) on any fixed-wing, powered civil aircraft used in air commerce after three years and six months following such date.

"(2) The provisions of this subsection shall not apply to:

"(A) Turbojet-powered aircraft;

"(B) Aircraft while engaged in scheduled flights by scheduled air carriers certificated by the Board;

"(C) Aircraft while engaged in training operations conducted entirely within a fifty-mile radius of the airport from which such local flight operations began;

"(D) Aircraft while engaged in flight operations incident to design and testing;

"(E) New aircraft while engaged in flight operations incident to their manufacture, preparation, and delivery;

"(F) Aircraft while engaged in flight operations incident to the aerial application of chemicals and other substances for agricultural purposes;

"(G) Aircraft certificated by the Administrator for research and development purposes;

"(H) Aircraft while used for showing compliance with regulations, crew training, exhibition, air racing, or market surveys; and

"(I) Aircraft equipped to carry not more than one person.".

Approved January 2, 1974.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-677 (Comm. on Public Works).
SENATE REPORT No. 93-628 (Comm. on Public Works).
CONGRESSIONAL RECORD, Vol. 119 (1973):
Dec. 3, considered and passed House.
Dec. 14, considered and passed Senate, amended.
Dec. 21, House concurred in certain Senate amendments with amendments; Senate agreed to House amendments.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 10, No. 1 (1974):
Jan. 2, Presidential statement.

4. Does the 55 MPH Speed Limit Save Lives?

Overview This lesson emphasizes the discovery method of learning. Through constructing and interpreting graphs and answering questions, students are led through the steps on investigating an hypothesis: The 55 MPH Speed Limit saves lives.

Objectives Students should be able to develop increasing competency in gathering data and testing an hypothesis.

Materials Student prepared materials Parts A and B
Colored Pencils

Suggested Time 1-2 class periods

Teaching Strategies

Defining the Terms

Breaker	the speaker wants to talk to you on channel 19
Got your ears on?	are you tuned in to channel 19?
Going to put the pedal down	preparing to travel at a fast rate
Smokey	a state trooper or policeman
Taking pictures and giving out green stamps	using radar and giving tickets or fines
What's your Ten-Twenty?	Where are you?
Ten-four	I understand
Four-roger	Okay. Yes.

The special feature C.B. radio conversation may be used to introduce this lesson. Read it aloud or have ditto copies available for the class to read. Discuss the rapid growth of C.B. radios. Why do people like to talk to others in this way? Why do they use a kind of code?

Another way in which to begin this lesson is to have a tape recording of this conversation (or a similar one). Give students a few minutes to listen to it. Then plunge at once into the subject of saving lives as a good citizen's responsibility. The motivating question might be: How can people protect themselves from themselves? A lively debate can result, and, if properly directed, it can lead to a consideration of good safety rules for drivers.

A third approach to this lesson on saving lives might be through a discussion of the special terms in the C.B. Conversation. This approach can lead to a direct approach into the graph constructing part of the lesson.

Place the following question on the board: Do you think the increase in the number of people using C.B. radios has made law enforcement more difficult?

This question refers to the fact that if people know where the police are, they tend to avoid that area or slow down. Once past the area, they speed up again. C.B. information has made law enforcement more difficult.

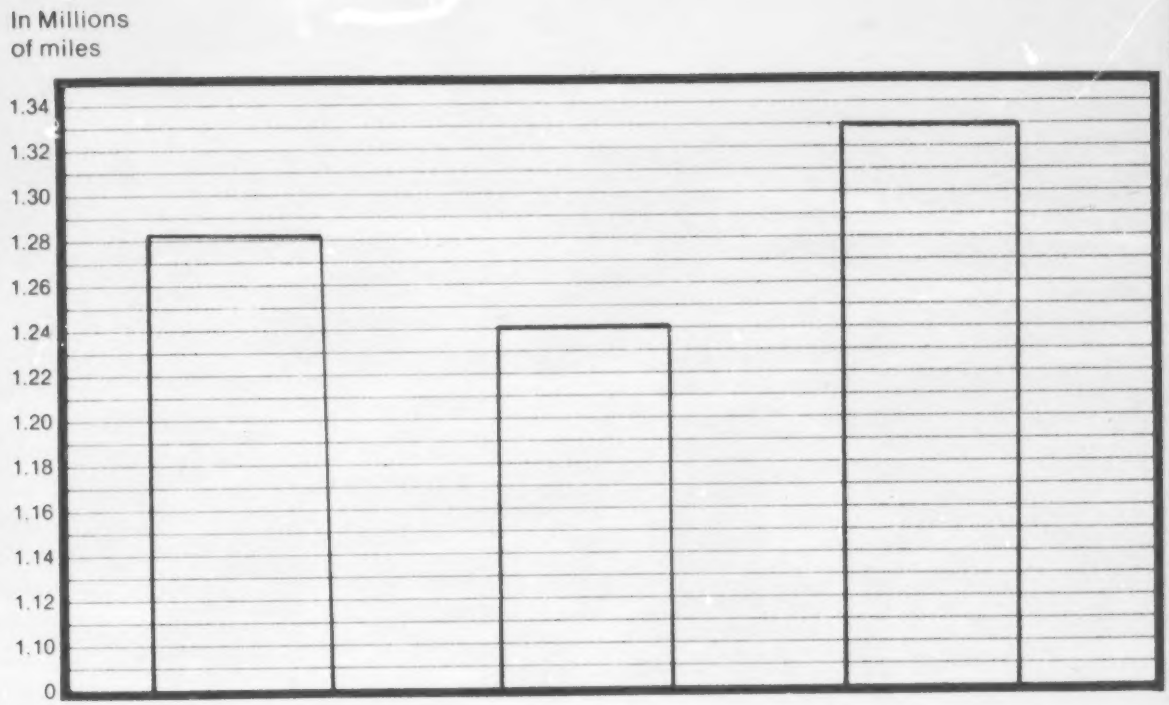
Play back the C.B. Conversation, or have students re-read it. Ask: Can you think of a way the C.B. information might help save lives?

Students can offer a variety of opinions at this time. Draw from their backgrounds examples of driving habits they have seen, such as slowing down in radar areas. Slowing down, for whatever reason, lowers the chance of fatal accidents.

BAR GRAPH

Construct a bar graph that will show the number of vehicle miles traveled on American highways in the years 1973, 1974, 1975, using the data on the table. Put a title on your graph.

Year	Number of Vehicle Miles
1973	1,283,700 Million
1974	1,248,000 Million
1975	1,330,052 Million



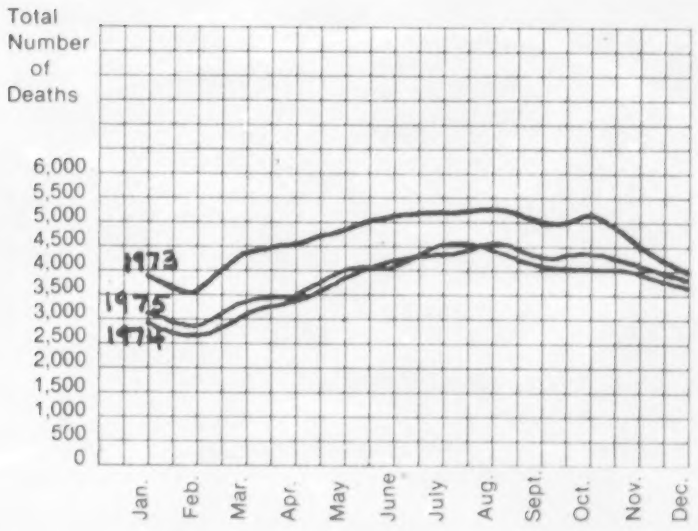
What do you think accounts for the change in miles driven in 1974?

The oil crisis brought on fuel shortages in many parts of the nation. The shortage brought on higher gasoline prices.

Graphs have the advantage of showing information quickly. Use the chart tabulations of the number of traffic deaths for 1973, 1974, and 1975 to make a line graph. The months should be shown on the horizontal line at the bottom, called the X axis; the total number of deaths should show on the left, called the Y axis. Use a different colored pencil for each year.

Number of Traffic Fatalities on U.S. Highways

	1973	1974	1975
Jan.	3,847	2,947	3,119
Feb.	3,524	2,679	2,865
Mar.	4,355	3,191	3,399
Apr.	4,500	3,385	3,463
May	4,801	3,763	4,025
June	5,176	4,200	4,124
July	5,186	4,330	4,537
Aug.	5,241	4,597	4,434
Sept.	4,916	4,246	4,015
Oct.	5,202	4,368	4,010
Nov.	4,401	4,161	3,911
Dec.	3,911	3,850	3,754



What conclusions can you draw about the years 1974-75?

The number of deaths in 1974-75 are very close in range.

What conclusions can you draw when you compare the number of deaths in 1973, 1974, 1975?

There were significantly more deaths in 1973 than in the following years.

Using Both Graphs

What relationship do you see between the total number of miles driven and the number of highway deaths?

The graphs show that the miles driven increased again in 1975, but the death rate stayed down.

How does the information on both graphs help to support the conclusion made by the National Highway Safety Administration that "lowering the speed limit on the nation's highways saves lives?"

The number of traffic deaths dropped in 1974, in part, because there were fewer miles driven. The graphs show that the miles driven increased again in 1975, but the death rate stayed down. This must have been caused by the lowered speed limit.

5. How is the 55 MPH Speed Limit Enforced? P.L. 93-239 P.L. 93-643

Overview

Enforcement of a federal or national law requires the essential cooperation of the states. In many ways the role of state government is to serve as a kind of go-between for the national government and the metropolitan areas where most people live today. This essential cooperation among national, state, and local governments is called federalism. That is, states undertake the responsibility to work with the federal government to the benefit of all the people. Let us now examine the function of modern state governments in enforceing a particular federal law: the 55 MPH Speed Limit law.

Objectives

Students should be able to:

1. examine P.L. 93-643 and explain how its enforcement is an example of federalism.
2. examine the responsibilities a state government has to you, as a full-fledged member of your state and of the United States.
3. evaluate your opinion about the law as a citizen-member of two governmental units.

Materials

Class ditto copies of Student Reader and questions
55 MPH advertisement
Teacher's Key

Suggested Time

2-3 class periods

Teaching Strategies

This lesson may be started through a discussion of the meaning of federalism. You should explain that our states are units of government that have considerable power to govern the people who live within their borders.

You may have considerable success with this concept by having students review Amendments 9 and 10 in the Constitution. These are the so-called "states rights" amendments. They limit the powers of the national government and have often been appealed

to when certain states have objected to federal laws.

An open-book lesson may be employed here to help students to read better, to skim for facts or to outline. Use the student questions in the text one at a time and in order. Answer one question by referring to the text. Then move on to the next question, again using the text as reference.

Answers to Student Questions

1. What does the table show you?

The table shows the state of Maryland as rigidly enforcing the speed limit imposed by the Governor of that State. The rate of tickets issued per month was 100% greater in the last half of 1975 than it was during the same period in 1974.

2. What is most likely the reason why the state of Maryland raised fines for speeders?

Maryland encouraged its citizens to become energy conscious. Saving energy was the most probable reason for increasing the fines.

3. How would a relief map of the United States help you determine if people living in Kansas might suffer real hardships under the reduced speed limit?

A relief map should show the flat, open terrain of the American Mid-west. Highways would cross thinly-populated states in this region, so perhaps speeds of 60 MPH would be safe and reasonable. Tourists, perhaps more than residents of the Plains states, would suffer more hardships as travel time converts to money. Real hardship is probably an exaggeration.

4. How is Senator Dole representing his constituents and looking out for their interests?

All Senators and Representatives wear two hats. The people elect them to represent them at the national level of government and expect them to put their interests first. Unfortunately, state interests often conflict with those of all the people. When Senator Dole stood for higher speed limits, he was reflecting the views of his constituents.

5. Which statement by Senator Dole reflects the belief that each state has the supreme power to chart its own course of action?

The second statement.

6. Senator Dole spoke of saving lives when he said the flat, arrow-straight roads of Kansas permitted safe driving at 60 MPH. How could he be working for the welfare of the entire nation if we would tell Kansas citizens that most automobiles get 24% more miles a gallon on highways at 50 MPH, and about 20% more at 55, than at 70?

He would make a national concern superior to a state concern.

7. If someone said to you that saving lives and energy is ultimately up to all of us, how could you explain this statement by saying that's what federalism is all about? How does a law such as the national speed limit need the cooperation of state and national governments?

The national speed limit can work only with the full support of the states. This kind of cooperation is federalism.

6. Does the 55 MPH Speed Limit Save Energy?

Overview

In this lesson students will examine the fuel savings of the 55 MPH speed limit. There are three activities in this lesson.

Activity 1 is a brief class discussion in which the students take a straw vote on whether they think that fuel is saved by driving at 55 MPH instead of 70 MPH.

Activity 2 is a small group activity. The students are given a data table showing the gas mileage of several cars driven at selected speeds. They answer questions asking them to apply the data and consider possible causes for the fuel savings at lower highway speeds.

Activity 3 is a teacher-led discussion. Ideas formulated by the students about the benefits and drawbacks of slower highway speeds are presented. Factual material is supplied by the teacher to expand the students' ideas.

These activities are intended for use in General Science or Physics courses, but investigating the energy savings can be taught in a social studies classroom.

Objectives

Students should be able to:

1. analyze data concerning fuel consumption and speed.
2. evaluate the relationship between fuel consumption and speed.
3. identify the major factors affecting fuel consumption at different speeds.
4. evaluate positive and negative aspects of the 55 MPH speed limit.

Materials

Class copies of the student questions and data sheet
Student calculators, if possible

Suggested Time — 1-2 class periods

Teaching Strategies — Activity 1 - One way to begin this lesson on the subject of saving energy by driving slower is to present a brief history of motor vehicle speeds and speed limits.

History of Cars and Speed

The first automobile in the United States was driven in 1893. Almost immediately, man set out to see how fast he could make it go. By 1894, people were talking about an automobile race. The first race took place one year later in Chicago. It was a 52 mile race with the winner averaging 5.05 MPH.

By 1900, when cars were first produced in any large quantity, 10 MPH was considered a reasonable speed on the open road. In 1901, New York and Connecticut passed the first motor vehicle speed limit laws in the United States. The speed limits were 8 MPH in the cities and 15 MPH on the open road. These laws also contained a provision that a motorist, upon meeting a horse, must pull to the side of the road and, if necessary, turn off the motor to allow the horse to pass. These early speed laws were passed mainly to pacify the non-motorists who complained of the noise and dust as opposed to modern day speed limits that are designed to protect the motorist from himself and from other motorists. Now, of course, speed limits are imposed to conserve fuel, too.

From the very early car speeds of 5 MPH, cars quickly became capable of higher speeds. In 1904, Henry Ford set a world's land speed record of over 93 MPH! By this time, highway speeds were about 15 MPH, mostly because the road system was not designed or constructed for automobile traffic. They were more suitable for horse and buggy travel. Very few paved roads existed. However, road construction for automobile traffic began about 1900 and has continued until the present time. Speed and speed limits continued to increase as a network of paved roads grew across the nation.

- Department of Transportation

Motivating Learning — The motivating question to get students thinking about fuel savings might be: Is fuel saved by driving at 55 MPH rather than 70 MPH? Take a straw vote in Yes/No columns on the chalkboard,

allowing for qualified votes. Some students may say, for example, that fuel is saved by driving cars at 55 MPH, but not trucks. Accept this viewpoint without discussion at this time. A separate vote could be taken for trucks, if the class wishes.

Note: The class may agree that fuel is saved by driving slower. In this case, the straw vote might center around how much saving there is. The most useful form for expressing the savings is in miles per gallon (MPG), although percentage or dollars could be used.

Activity 2 - A good approach to this activity is to break the class into small groups of 3-5 students each. Distribute the student worksheets and data tables. Most students should complete the work without the teacher's assistance, although some may need help with the calculations in Question 1.

Activity 3 - This activity involves the whole class in a discussion of the conclusions reached in the previous activity. The discussion centers around the amounts of fuel saved, the causes for the savings, and the societal impact of the controversial 55 MPH speed limit.

Effect of Speed on Fuel Consumption Rates
Automobiles

Test Car Number and Net Weight (lbs.)	Miles Per Gallon At Selected Speeds				
	30	40	50	60	70
1 (4,880)	17.12	17.20	16.11	14.92	13.13
2 (3,500)	19.30	18.89	17.29	15.67	13.32
2A (3,500)	21.33	21.33	18.94	17.40	15.36
3 (3,540)	23.67	24.59	20.46	14.83	13.42
4 (3,975)	18.25	20.00	16.32	15.77	13.61
5 (2,450)	31.45	35.19	33.05	30.78	22.82
6 (3,820)	22.88	19.41	20.28	17.78	14.88
7 (3,990)	15.61	14.89	16.98	13.67	11.08
8[1] (2,050)	(24.79)	(27.22)	(26.80)	(24.11)	N.A.
9 (2,290)	21.55	20.07	19.11	17.83	16.72
10 (2,400)	22.72	21.94	22.22	21.08	17.21
11 (5,250)	18.33	19.28	15.62	14.22	12.74
12 (4,530)	20.33	20.00	17.50	16.17	14.86
Average (Unweighted)	21.05	21.07	19.49	17.51	14.93

[1]Since vehicle #8 could not be operated satisfactorily at 70 miles per hour, its miles per gallon performances were omitted from the averages. They are, however, given in parentheses.

Answers to Student Questions

1. How many gallons of gas could be saved by driving a car 100,000 miles at 50 mph instead of 70 mph?

In order to do this calculation the students first need to change miles per gallon into gallons per mile.

This is a reciprocal relationship

$$\frac{\text{miles}}{\text{gallon}} = \frac{1}{\frac{\text{gallons}}{\text{mile}}}$$

$$\text{At 70 mph, } 14.93 \frac{\text{miles}}{\text{gallon}} = \frac{1}{14.93} \frac{\text{gallons}}{\text{mile}}$$

$$\frac{1}{14.93} = .051 \text{ (1 0 14.93 = .051) so}$$

$$14.93 \frac{\text{miles}}{\text{gallon}} = .051 \frac{\text{gallons}}{\text{mile}}$$

$$\text{At 50 mph, } 19.49 \frac{\text{miles}}{\text{gallon}} = 19.49 \frac{\text{gallons}}{\text{mile}} =$$

$$.067 \frac{\text{gallons}}{\text{mile}}$$

$$.067 \frac{\text{gallons}}{\text{mile}} - .051 \frac{\text{gallons}}{\text{mile}} = .016 \frac{\text{gallons}}{\text{mile}}$$

(at 50 MPH) (at 70 MPH) (saving)

$$.016 \frac{\text{gallons}}{\text{mile}} \times 100{,}000 \text{ miles} = 1600 \text{ gallons}$$

Roughly one billion intercity highway miles are travelled each day in the United States. One billion is 10,000 times 100,000. The savings in gas for 100,000 miles that the students calculated can be multiplied by 10,000 to find the daily savings for a national reduction in speed from 70 mph to 50 mph.

1600 gallons x 10,000 = 16,000,000 gallons

The savings in money per day or per week that can be realized by the average individual driver are not great. The average American car is driven 10

high speed miles per day. Using the figure of .016 gallons/mile saved by driving at 50 mph instead of 70 mph, the weekly savings is only 1.1 gallons (about 67¢ if gasoline is 60¢ a gallon). This amounts to about $35 a year. At the present time motorists have no difficulty purchasing 20 gallons at a time, so 1.1 gallons is not a very noticeable savings. As our petroleum reserves dwindle causing a rise in the price of gasoline and/or rationing, this 1 gallon saved per week may become more important to the individual.

On a national level, 16 million gallons of gasoline saved each day is significant. However, an enforced speed limit is necessary to achieve this fuel savings. The immediate savings to an individual is not enough to make a voluntary slow-down program work for very long.

The national speed limit of 55 mph yields a slightly smaller fuel than 50 mph would (11 million gallons per day vs. 16 million). The speed limit was set at 55 mph to provide better fuel economy while not seriously upsetting the interstate truck industry.

2. What are the causes of the increase in gasoline consumption as speed increases?

   The two most important causes are the increase with speed in the rolling resistance and the air drag. These two terms are defined below.

Rolling Resistance: This means what it says, it is the resistance to rolling and is caused by friction between the moving parts in the drive train (the transmission and differential), in the axle and wheel bearings and between the tires and the road. It is a resisting force which the engine must overcome. The important thing to know is that it gets bigger as the wieght of the car increases and that while it does not change very much with speed while the car is traveling slower than 40 mph, it increases rapidly (as the square of the increase) above 40 mph. This latter change is probably caused by changes that occur in automobile tires as speed increases. Above 40 mph most automobile tires begin to deform. A great deal of energy goes into setting up wavelike motions in the tire rather than moving the automobile.

Air Drag: Air drag or air resistance is also a force which the engine must overcome. It depends

on the shape of the car and on its speed. The important factors are (1) that streamlining reduces the drag and (2) that the drag goes up as the square of the speed. (This means that doubling the speed quadruples the air drag.) Air drag is a larger factor in the loss of gas mileage at high speeds than rolling resistance. This is especially true for trucks which are usually not streamlined at all.

Streamlining of automobiles began with the ill-fated Chrysler Airflow in the 1930's. Since that time autos have become continually more "sleek" and "aerodynamic." Unfortunately, real reductions in air drag have not been as great as appearances might indicate. One major reason is probably that while stylists have smoothed out the part of the car that we see, the underside of the car is the same rough, irregular shape that it was in the 1930's. A few automobiles (Porsche 904 and Jaguar E-type) have been produced with a smooth "belly-pan" and these cars have relatively low drag coefficients.

3. Identify other possible benefits of lower highway speeds.

SAVES LIVES

The lowered speed limit has reduced the automobile death rate. The actual number of accidents has not been significantly reduced. Accidents are less serious at lower speeds which results in fewer serious injuries and deaths.

TIRES

Tires wear longer at speeds under 40 mph. Tires deform above that speed and their rate of wear is accelerated.

MECHANICAL COMPONENTS

The engine, transmission, differential, and wheel bearings all run at lower temperature at lower speeds. Wear rate on these components increases as temperature increases. The lowered speed limit allows these things to run slower and cooler, so they can last longer.

Students may identify other hidden benefits. The ones mentioned here are measurable and important ones.

4. List some negative aspects of the 55 mph speed limit.

Wasted time and boredom are the two things that students most often identify. These complaints are very important from an energy standpoint. Our lifestyle has developed around the ability to do things and go places rapidly. Energy has not been considered in our pursuit of speed. Students need to be aware that rapid travel carries an energy penalty and that our supplies of energy are finite. Some change in our lifestyle is necessary if we are going to change our level of energy usage.

5. Would it be reasonable to set the speed limit at 30 mph? At 40 mph?

The answer to this question is no at the present time. There is little if any fuel saving by driving at speeds under 50 mph. There would also be extremely negative public reaction to such a drastic change in driving habits even if it represented a large fuel savings. Intercity trucks would be seriously affected by such a low speed limit.

Trucks

Trucks have not been emphasized in the above discussion because they account for only 1/4 of the total energy used anually in intercity highway travel. Fuel consumption data is provided for trucks to show students that fuel is saved by operating trucks at lower highway speeds. However, truck drivers are governed by regulations that do not apply to automobile drivers. The effects of these regulations must be considered along with fuel consumption in any discussion of whether a given speed limit is reasonable.

Safety regulations include mandatory rest stops and a 10 hour per day driving limit. Truck shipping routes and terminal locations were established considering these regulations, but with a speed limit of 60-70 mph. The safety regulations prevent truck drivers from compensating completely for the longer time that is necessary to make a given trip at lower speeds.

Present terminal locations require that a round trip between points 200 miles apart be possible in

one truck drivers' day. A speed limit of 55 mph makes this trip possible. Further reduction in the speed limit would require additional trucks on the highway. This would result in increased total fuel consumption.

Fuel consumption rate for individual trucks could be improved most by reducing air drag. Trucks have a much higher drag coefficient than autos do. Rolling resistance is much less a factor in truck fuel economy than it is for autos. The difference between truck and auto tires probably accounts for this difference. Harder, larger truck tires do not deform at highway speeds. Rolling resistance does not increase very much as speed increases so fuel consumption is not affected appreciably by a speed increase.

The following fuel consumption data can be used to show that the amount of fuel used increases as speed increases for trucks as it does for cars.

Fuel Consumption Data
Tractor Trailer Combinations

VEHICLE NUMBER	MILES PER GALLON AT SELECTED SPEEDS			
	50	55	60	65
1	5.12	5.06	4.71	*
2	5.41	5.02	4.59	4.08
3	5.45	4.97	4.52	*
4	5.21	4.90	4.88	4.47
5	4.49	4.40	4.14	3.72
6	4.97	4.51	4.42	*

* Each figure listed in this table is the average of more than 20 timed runs on roadways with less than 1 percent grade. Fuel economy comparisons among trucks of different manufacturers should not be made on the basis of these data, for the reasons stated in the preface.

* The governor setting that controls fuel injection did not permit this vehicle to be operated at 65 miles per hour.

7. Will Slower Speeds Benefit the Environment? By How Much?

Overview

In addition to saving oil and lives, reducing the average speed of automobiles on the highway has benefits for the environment. The 55 MPH speed limit reduces oil consumption and thus reduces the need for tanker shipment of oil. Less gasoline consumption also would reduce the amount of lead going into the atmosphere, and reduce CO, hydrocarbon, and NOx pollution.

In this lesson students could compute how many fewer tankers of the Argo Merchant size would be needed at 55 instead of 70 MPH travel (and how many accidents prevented), and reductions in tonnage of Pb, HC, CO, and NOx emitted.

For science and math classes.

Objectives

Students should be able to:

1. determine by what percent the burning of gasoline increases the national totals of pollutants.
2. determine how much each of the pollutants we could have been spared if the 55 MPH speed limit had been enforced.
3. assess how tanker spills and tanker cleaning contributes to the pollution of the seas, to losses to oil refineries, and to higher trade deficits.

Materials

Class sets of Activity 7 chart and questions.

Suggested Time

1 class period

Teaching Strategies

Review with the students the savings in lives, gallons of gasoline, engine wear and tear that resulted from reducing the highway speeds on the nation's roads. Ask students if there were other savings from using a lighter foot on the accelerator. Lead the class toward a discussion of possible benefits to the environment. Could we

save money by reducing the number of accidents that happen to oil tankers? How much money could we save if we had those barrels back that were spilled at the time of tanker loading or in cleaning the tankers?

Using the Table

At this point in the lesson, direct the students' attention to the table of pollutants released by the burning of gasoline. Have the students answer the questions.

Summing Up

Go over the questions at the end of the class period and allow sufficient time to have the students make some generalizations about the benefits to both the environment and the dollar that can serve as an informal evaluation tool.

Answers to Student Questions

1. *Chart should look like this:*

Nitrogen oxides: 133 lbs/1000 gal =
13,300,000,000 lbs/100,000,000,000 gal

13,300,000,000 lbs = 6,650,000 tons or
6.7×10^6 tons

6.7 = N % of 22.5
n = 29.8%

Hydrocarbons: 130/1000 *6.5×10^6 tons*

6.5 = N % of 30.4
N = 21.4%

Carbon Monoxide: 1534/1000 *76.7×10^6 tons*

76.7 = N % of 94.6
N = 81%

2. We determined in Activity 6 of this packet that driving at 55 MPH instead of 70 MPH could save 11 million gallons of gasoline per day.

a) How much gasoline could be saved in a year?

$11 \times 10^6 \times 365 = 4.015 \times 10^9$ gal.
or 4015 millions of gal.
or 4 billion gal.

b) By what percentage would this have reduced U.S. gasoline consumption in 1976? (Assume that there were no savings implied in the 1976 gasoline consumption of 100 billion gallons.)

$4015 \times 10^6 = N\ \%\ of\ 1 \times 10^{11}$

$N = 4\ \%$

3. How much of each of the pollutants could we have been spared if the 55 MPH limit had been rigorously observed in 1976? (Hint: Each pollutant would be reduced by the percentage calculated in Problem 2.)

Nitrogen oxides $.04 \times 6.7 \times 10^6$ tons = $.27 \times 10^6 = 270{,}000$ tons

Hydrocarbons $104 \times 6.5 \times 10^6$ tons = $.26 \times 10^6 = 260{,}000$ tons

Carbon monoxide $.04 \times 76.7 \times 10^6$ tons = $3.067 \times 10^6 = 3{,}070{,}000$ tons

4. In problem 2, you computed the gallons of gasoline saved in one year. There are 42 gallons of gasoline in a barrel. How many barrels of gasoline would have been saved in that year?

4015 million or 4.015×10^9

$4.015 \times 10^9 - 42 = 95{,}595{,}238$ barrels

95.6×10^6 barrels

95.6 millions of barrels of gasoline would have been saved

5. Let's assume that you get a barrel of gasoline from a barrel of oil (you can get almost this amount). A barrel of oil weighs about 300 pounds. How many tons of oil would not have needed tanker shipment in 1976 if we had saved the amount of gasoline (oil) computed in problem 2?

$95.6 \times 10^6 \times 300 =$

28680×10^6 lbs/2000 = 14,340,000 tons

14.3 millions of tons

14.3×10^6 tons or

14.3 million tons

6. The tanker Argo Merchant, which was wrecked off of Nantucket Island in the winter of 1976-77 carried 31,000 tons of oil. How many trips by tankers of Argo Merchant size could have been saved by this reduction in speed?

$$\frac{14,300,000}{31,000} = 461 \text{ trips}$$

7. Taking the same ratio as is given in the background statement preceding problem 4, how much oil pollution would we have prevented from reaching the ocean?

$$\frac{960}{1,000,000} = \frac{x}{14,300,000}$$

$x = 13728$ tons of oil pollution prevented
$= \underline{13,700 \text{ tons of oil pollution prevented}}$

8. In the wreck of the Argo Merchant off Nantucket Island in the winter of 1976-77, 31,000 tons of oil were spilled into the ocean. For each million tons of oil transported, we expect 115 tons to be spilled by an accident. In problem 5 we computed by how much we reduced total shipment by the lower speed. How much of this would we expect to have been spilled by an accident?

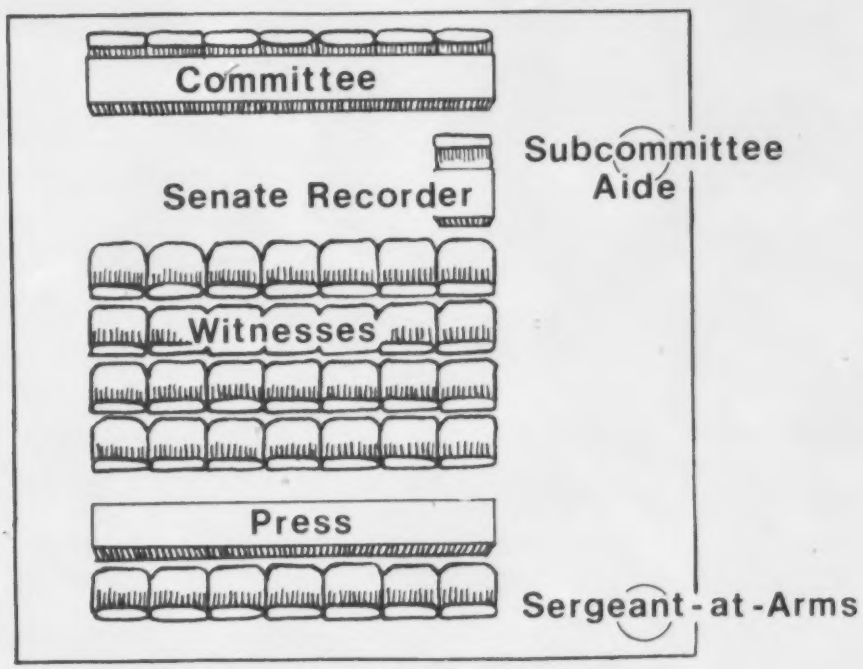
$$\frac{115}{1,000,000} = \frac{x}{14.3 \times 10^6}$$

$x = 1644.5$ tons
$= \underline{1600 \text{ tons}}$

9. We pay about $14 to some foreign country for each barrel of oil we import. By how much could we reduce our foreign trade deficit if we saved the amount of oil we have been discussing here?

$\$14 \times (95.6 \times 10^6)$ barrels $= 1,338,400,000$
$= 1,300,000,000$
$= \underline{1.3 \text{ billion dollars}}$

Student Guide



SENATE HEARING ROOM

Name_____ Score_____

PRE-TEST for the 55 MPH Law Case Study

Test items 1-4 are based on the printed matter below. Choose the best answer for each question. Put the letter of that answer in the blank.

Public Law 93-239
93rd Congress, H.R. 11372
January 2, 1974

An Act

To conserve energy on the Nation's highways.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act be cited as the "Emergency Highway Energy Conservation Act."

_____1. Which best describes the reading?
a. a bill
b. a House Calendar
c. a committee hearing
d. a federal law

_____2. What is the purpose of the Act?
a. saving lives
b. saving the environment
c. saving fuel
d. paving roads

_____3. Laws are enacted by
a. the President of the United States
b. Congress
c. voters
d. the Supreme Court

_____4. This Act has a title. What is it?
a. Public Law 93-239
b. An Act of Congress Assembled
c. Emergency Highway Energy Conservation Act
d. HR 11372

Test items 5-10 are based on the information in the box below. Choose the best answer for each question. Write the letter of that answer in the blank.

EFFECT OF SPEED ON FUEL CONSUMPTION RATES

Test Car Number and Weight (in lbs.)	Miles Per Gallon At Selected Speeds				
	30	40	50	60	70
1 (2,400)	22.74	21.94	22.22	21.08	17.21
2 (4,800)	17.12	17.20	16.11	14.92	13.13
3 (3,500)	19.30	18.89	17.29	15.67	13.32
4 (5,240)	18.33	19.28	15.62	14.22	12.74

_____5. What is this form of presentation called?
a. a case study
b. a graph
c. a table
d. a simulation

_____6. What does this information show?
a. The number and weight of cars in the United States.
b. Miles per gallon for different cars at various speeds.
c. How fast some cars can go.
d. Heavier cars consume less fuel at all speeds.

_____7. Which car had the higest gasoline consumption at 40 MPH?
a. Car 1
b. Car 2
c. Car 3
d. Car 4

_____8. Which car had the highest gasoline consumption at 70 MPH?
a. Car 1
b. Car 2
c. Car 3
d. Car 4

_____9. How are the numbers in miles per gallon related to the consumption of gasoline?
a. The higher the miles per gallon number, the higher the gasoline consumption per mile.
b. The higher the miles per gallon number, the lower the gasoline consumption per mile.
c. The number of miles per gallon is not related to the gasoline consumption.

_____10. For what change of speed did the greatest increase in fuel consumption occur for all test cars?
a. Between 30 and 40 MPH
b. Between 40 and 50 MPH
c. Between 50 and 60 MPH
d. Between 60 and 70 MPH

Test items 11-17 are general questions on laws and the legislative process. Choose the best answer for each question. Write the letter of that answer in the blank.

_____11. The first Congress met for a two year term in 1789. Each two years thereafter the Congress is given a new number. What is the number of the Congress which met in 1976?
a. 95th
b. 94th
c. 92nd
d. 93rd

_____12. Which of the following is often called "The House?"
a. The House of Representatives
b. The Senate
c. The Congress
d. the Home of the President

_____13. To become a law a bill must
a. start first in the House of Representatives.
b. start in the Senate.
c. pass both houses of Congress and be signed by the President.
d. pass both houses of Congress without amendments.

_____14. Who has the burden of enforcing a law such as P.L. 93-239?
a. Congress
b. the President
c. the people
d. the Congressman who introduced the bill

_____15. A proposed law is called a
a. treaty
b. bill
c. veto
d. hearing

_____16. If the President of the United States decides that a certain law should be passed, how can he get Congress to act on it?
a. He can suggest laws to Congress in his State of the Union Message.
b. He can appoint Congressmen who will follow his wishes.
c. He can hold a Congressional hearing.
d. He can ask that the proposed law be given more than three readings in each house of Congress.

_____17. What is the word that means that both sides settled their differences by giving in a little to each other?
a. treaty
b. federalism
c. compromise
d. citizenship

Test items 18-25 are general questions about the nature of energy use. Put the letter of the best answer in the blank.

_____18. Which of the following has little or no effect on the amount of gas a car consumes per mile?
a. weight of the car
b. speed it is driven at
c. brand of gasoline it uses
d. horsepower of its engine

_____19. The amount of oil which we import each year is
a. decreasing each year.
b. increasing each year.
c. provided mostly by Canada.
d. coming mostly from Alaskan wells.

_____20. Which of the following would NOT be considered when we talk about energy supply?
a. The amount of a resource already discovered and known.
b. Whether it can be extracted with present methods.
c. How much it costs to extract it.
d. Past patterns of consumption.

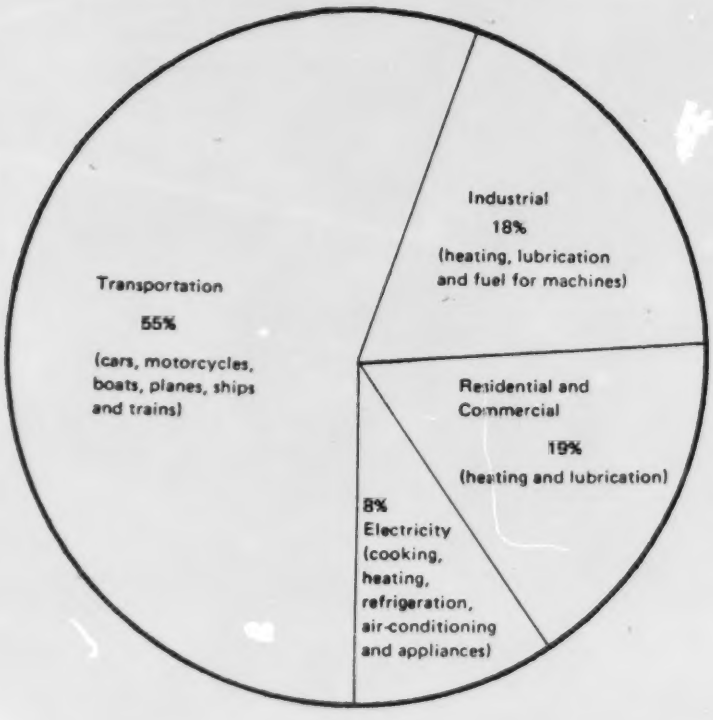
Read the information in the box, then put T in the blank before each test statement that is true of the United States oil policy during the two years 1971-1973. Put F if the statement is false.

> In 1971, we used 5.5 bbl. of oil. We produced 4.1 bbl. from our own wells and imported 1.4 bbl. to meet our needs.
>
> In 1973, we used 6.3 bbl. of oil. We produced 4.0 bbl. from our own wells and imported 2.3 bbl. in that year.

21. _____We increased our domestic production of oil over two years.
_____We increased our demand for foreign oil.
_____We continued to import oil
_____We cut back on the amount of foreign oil.

Look carefully at the pie diagram below. Choose the best answer for each test item. Write the letter of that answer in the blank.

Major Users of Oil Supplies, 1971
Total Supply = 5.5 Billion Barrels



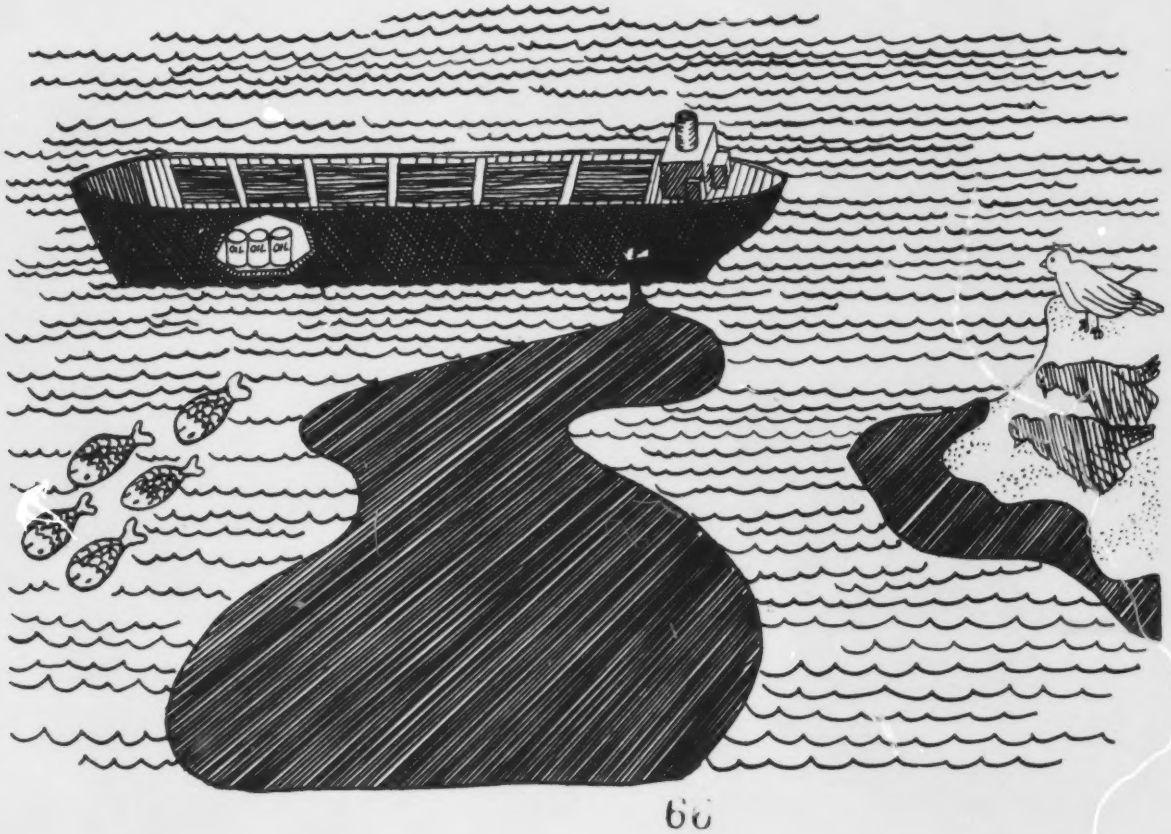
65

_____22. Which user has the greatest dependency on oil?
a. Industry
b. Transportation
c. Residential and Commercial
d. Electricity

_____23. The information on this diagram shows
a. the part of every tax dollar that is spent for Americans' energy needs.
b. the categories for fuel consumption in the United States.
c. how much oil the United States imports each year.
d. the environmental effects of oil use.

_____24. In 1971 Americans consumed 5.5 billion barrels of oil. How many barrels were used in transportation?
a. 0.5 bbl. (billions of barrels)
b. 1.1 bbl.
c. 3.0 bbl.
d. 1.2 bbl.

Look at the picture, then decide whether these statements are true (T) or false (F).



_____25. Oil spills affect coastal waters even more than deep ocean waters.

_____26. An oil spill means money lost to someone.

_____27. The picture shows energy is being transported.

_____28. A national speed limit could have an effect on what is shown in the picture.

_____29. It takes energy to transport energy.

_____30. Conservation of gasoline would mean we would have to import less oil.

Choose the best answer for the following question.

_____31. Reduce the average speed of automobiles and you will reduce all the following EXCEPT
a. the need for tanker ships of oil from other places
b. the amount of pollutants in the air
c. the number of highway deaths
d. the need for automobile factories

Activity 1 - Does Speed Make a Difference?
Part A: Student Survey

Name _____ Age____ Group _____

This is a survey, not a test. There are no right or wrong answers. An answer is right, if it is true for you. For each statement circle the alternative which best describes your reaction.

1. Driving slower will save thousands of lives each year.

1	2	3	4
Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

2. The Federal Government restricts the people too much.

1	2	3	4
Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

3. People tend to obey laws even if they disagree with their purposes.

1	2	3	4
Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

4. Driving slower will increase engine efficiency in a car.

1	2	3	4
Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

5. C.B. radios have helped people slow down on the highways.

1	2	3	4
Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

6. Driving slower will <u>not</u> reduce the number of accidents.

1	2	3	4
Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

7. Trucks and buses should have the right to go faster than 55 mph.

1	2	3	4
Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

8. State and local police should enforce the speed limit more strictly on the nation's highways.

1	2	3	4
Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

9. Saving energy is a good reason for having a speed limit.

1	2	3	4
Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

10. Saving energy is correlated with foreign oil prices.

Strongly Agree	Agree More Than Disagree	Disagree More Than Agree	Strongly Disagree

Activity 1 - Does Speed Make a Difference?
Part B: Examining an Ad

Look carefully at the advertisement. Take time to read the ad copy before answering the questions on this page.

1. The purpose of most ads is to sell something. What is the advertisement selling?

2. List two statements from the ad that are meant to convince people to drive slower.

   a.

   b.

3. Compare the message in the advertisement with the statements on the Student Survey. Which statements on the survey are supported by the ad? Write the supporting statements in the space below.

4. Suppose you were asked to investigate whether the claims in the ad were true. What <u>additional information</u> would you need for the following statements:

   a. The 55 MPH speed limit saves millions of gallons of gasoline.

      I would need to know:

   b. The 55 MPH speed limit saves thousands of lives on the highway each year.

      I would need to know:

5. How does enforcement give a law a chance to work?

The speed limit sign. It says 55 miles an hour. And it says it for some very good reasons. Like saving millions of gallons of gasoline and thousands of lives on the highways each year. But you know these reasons already. Everybody from the oil companies to the insurance companies have been talking about them for better than two years now. And some of you have been listening. Because some of you have slowed down. But there are still an awful lot of people who seem to think the 55 mph speed limit is something they can take or leave. It isn't. It's a law. With tickets and fines and all the rest. Just like any other law. And just like other laws, it can do a lot of positive things. But it's enforcement that gives a law a chance to work. The 55 mph speed limit is a sign of the times. And for the times. And it's something we've got to start paying attention to. Not just because it's a good idea. But because it's the law.

Sign of the times.

It's not just a good idea. It's the law.

A public service of this newspaper. The U.S. Department of Transportation and the Advertising Council.

Activity 2 - How a Bill Becomes a Law: A Case Study

A. A BILL IS INTRODUCED

On November 8, 1973 Rep. James J. Howard (D-N.J.) entered the House chambers, walked to the front of the room and dropped papers into a box on the clerk's desk. The box is called the "hopper" and the papers were a written proposal for a law to require all states to lower the speed limit on their interstate highways. The proposal is called a bill. This particular bill was the 11,372nd bill to be introduced during the Congressional year. It was therefore given the number H.R. 11372. In investigating how this bill continues through the process of becoming a law, we should look at how the bill first started with an idea.

B. WHERE IDEAS COME FROM

Ideas for most bills come from several different groups as well as individual persons. The people are a very powerful force. When enough Americans become concerned about a problem, they usually write to their Representative or Senator. Each Congressman and Senator has an office staff that keeps track of the letters that come into the office. When a large number of his constituents - the voters who live in the state or district he represents - request a law, he usually introduces a bill that contains their ideas.

Letters from worried constitutents began to reach Congress in larger and larger numbers by May, 1973 when the first signs of an oil shortage became visible. Gas stations began to limit purchases, shorten their hours, and raise prices. Almost immediately newspapers began

carrying stories of the possiblity that speed limits would be reduced to conserve fuel. Many of the letters received by members of Congress expressed people's dissatisfaction in the proposal to reduce speed limits. However, many people admitted the need for everyone to do something to save gasoline, so there would be enough for all.

Ideas for bills also come from the President. By the early part of 1973 the President had pretty well decided that any laws reducing highway speed limits should come from the states first since they have enforcement procedures. So on June 29th he announced that he was asking "...each of the nations Governors to work with their State legislatures to reduce highway speed limits in a manner consistent with safety and efficiency, as well as energy needs..."

This announcement by the President came well before the oil embargo, however, and state governors were slow to act. In November the oil embargo was taking effect in the United States and long lines at the gas stations were a common sight. Now the President chose to go to the people.

On nationwide TV the President informed the people that he was ordering a 50 MPH speed limit on all Federal cars and trucks. He proposed a 50 MPH national speed limit for highway travel which would be enforced by the states. In his message to the people the President predicted that gas would be saved and possibly fewer people would be killed if they drove slower.

Student Questions

1. Which statement tells you that public opinion is important in proposing a law?

2. How does a "crisis" or emergency influence the making of a law?

3. Who introduces a bill?

CONGRESS MAKES THE LAWS

THE BILL STARTS IN THE HOUSE

Rep. Howard introduced his bill the day after the President made his TV speech. The bill was marked HR 11372. The letters HR show that the bill is being considered by the House of Representatives. The number shows its place among all the bills presented in this particular session of Congress. The bill was also given a title: A Bill to Conserve Energy on the National System of Interstate and Defense Highways. Next the Speaker of the House of Representatives assigned the bill to one of the standing committees of the House. A standing committee is one of the permanent committees each house of Congress has. Since the subject of this particular bill had to do with highways, the Speaker referred the bill to the House Public Works Committee. At this time the bill was sent on to a smaller committee under the Public Works Committee. This subcommittee dealt with energy and transportation problems. Congressman Howard headed this subcommittee.

Someone once described the Standing Committees as operating like sieves, because they filter out those bills that are worthy of a longer look from those bills that are silly or unnecessary. Bills like these last ones are pigeonholed, which means they stay stuck in the committee and are never sent back to the House for further action. They die in committee. However, this did not happen to HR 11372. Since both the people and the President were concerned, the Subcommittee on Energy held hearings on the bill within three weeks. At the hearings interested persons, private organizations, and government officials were invited to give testimony for or against the bill.

Hearings are important because they point out problems that might have been overlooked in the original writing of the bill. The Howard Subcommittee on Transportation held their hearings in public and the committee members listened very carefully to the speakers. They wanted to understand all sides of the problem. The Subcommittee heard from the American Trucking Associations, the Department of Transportation, and other groups that would be affected by a reduction in speed limits. Many groups talked in favor of the bill. Others talked against it. The Trucking Associations pointed out

that trucks and buses would consume less fuel at 55-60 MPH than at 50. So they favored an even higher speed limit to keep down their costs. What soon became clear, however, from all the speakers was that a uniform speed limit was preferable to having one speed limit for cars and another speed limit for trucks and buses.

After the hearings the committee again studied the bill. Then the full Committee on Public Works amended the bill and sent to the whole House of Representatives a newly-written bill calling for a uniform maximum speed limit of 55 MPH on all highways. The new bill was a compromise between what the President wanted as a speed limit and the 55-60 MPH requested by the Trucking industry. The Committee recommended that to enforce the new speed limits, the Secretary of Transportation would not approve any further highway construction projects in those states that did not post the maximum 55 MPH speed limit. The law would be temporary, expiring on June 30, 1975 unless the President declared an end to the fuel shortage before that date.

Student Questions

4. What is the work of committee members at a hearing?

5. What may have been some of the reasons for inviting the following groups to appear at the hearing on the speed limit?

   a. the Trucking Association?
   b. the Department of Transportation?
   c. interested citizens?

6. How does the federal government plan to punish any state that falls behind in enforcing the speed limit laws?

When HR 11372 came out of committee it was sent to the House and placed on the House Calendar. The calendar is the schedule which lists the order in which bills are considered. In the case of HR 11372, the leaders of the House felt the legislation was so important that they called for a suspension of the rules. When they did this, the bill was to be voted on out of order.

Like all bills, HR 11372 must be given three readings in the House of Representatives. By the time its turn comes on the calendar, the first reading has already occurred. It came when the Speaker first read the title of the bill and assigned it to the Committee on Public Works.

The clerk read the bill and members of the House debated it. That is, some spoke for it, and some spoke against it. The bill now had its second reading, which occurs after the bill has been debated. HR 11372 passed by a majority of the House members in favor on December 3, 1973. The members voted by voice vote, will all in favor say "aye." Before the vote was taken; the bill was read for the third time. Not in its entirety - by title only. Now the bill would be sent to the Senate. It had been changed (amended) in wording and title. It was now called: A Bill to Conserve Energy on the Nation's Highways.

Student Question

7. When do the three readings of the bill occur?

IN THE SENATE

After HR 11372, now amended, passed the House, it was sent to the other house of Congress - the Senate. Here the bill was handled much the same way it was in the House of Representatives. The process is outlined for you:

1. Bill is introduced in the Senate.
2. Read by the Presiding Officer and sent to Senate committee on Public Works.
3. Subcommittee on Transportation holds hearings on the bill.
4. After the hearings, the Committee on Public Works amended the bill. The change said that a state could, if it wished to do so, set the speed limits lower than 55 MPH. The amended bill would also allow public money to aid states in setting up carpool experiments.
5. Bill sent to the Senate for debate and vote.

When the bill reached the Senate floor, it had a new name. It was now called The Emergency Highway Energy Conservation Act. One amendment to the Senate bill had nothing to do with the 55 MPH speed limit, or energy conservation. It was to request

a delay of a requirement of the Federal Aviation Agency to have all private planes install expensive emergency equipment. This kind of amendment is called a rider. A rider is a provision that is attached to an important bill, thus hitchhiking or riding through on the strength of the more important bill.

Student Questions

8. What is meant by "the bill was placed on the calendar?"

9. What is a rider?

After the Senate finished its debate, adding several amendments, the bill was given its third reading and voted on. As in the House, a voice vote was taken, and the bill passed. Before the bill can be signed into law by the President, however, the version passed by both houses must be the same. To iron out the differences in HR 11372, the House looked at the Senate amendments, accepted all but one, and sent the bill back to the Senate. The Senate agreed to this final version. In the case of this bill, the changes were fairly minor, so it was not sent to a full conference committee. The conference committee is made up of ten or fourteen people. Five or seven are from the House. An equal number are from the Senate. The committee talks about the differences in the two bills. They try to settle the differences.

The bill was signed by the Speaker of the House. It was signed also by the President of the Senate. Then it was presented to the President of the United States for his signature. The President signed the bill on January 2, 1974. The bill became a law. It was now called Public Law 93-239. The number meant it was the 239th law of the 93rd Congress. Its title read: THE EMERGENCY HIGHWAY ENERGY CONSERVATION ACT.

Student Questions

10. Sometimes in signing a bill, the President uses many pens which are given to supporters of the bill. Can you list some of the persons who might be given a pen for P.L. 93-239?

11. Follow HR 11372 through all the steps on the flowchart of "How A Bill Becomes A Law" which is included at the end of this packet. How long do you think each step might have taken?

12. How easy is it for a bill to become a law?

THE END AND THE BEGINNING

Although the 55 MPH speed limit was now a national law, it was only a temporary measure to meet the gasoline shortage. By the summer of 1974 it became clear that the speed limit had another effect. Fewer people were dying from highway accidents. Statistics revealed that deaths were down by as many as 1,000 a month. To make P.L. 93-239 permanent because lower speed saved lives, Sen. Percy (R-Ill.) introduced a bill to "Conserve Energy and Save Lives by Extending Indefinitely the 55 MPH Speed Limit on the Nation's Highways." The bill was referred to the Senate Committee on Public Works and became a part of another bill. It became a part of the FEDERAL AID HIGHWAY AMENDMENTS of 1974. It was debated and went to a conference committee because, while the House had a similar bill, it was significantly different from the Senate bill. Five members of each house met and produced a bill in which both sides gave up something. The conference compromise bill was accepted by both houses on December 18, 1974. The President signed the bill on January 4, 1975. The bill was now Public Law 93-643.

Student Questions

13. How do the two laws differ? List the differences between P.L. 93-239 and P.L. 93-643 after looking over the provisions of each on the next page.

14. Explain the kind of coding system the government uses to help keep track of laws. What do the following numbers mean?

    a. 93? b. 239? c. 643?

15. Describe the work of a conference committee.

Public Law 93-239

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act be cited as the "Emergency Highway Energy Conservation Act."

Sec. 2. (a) The purpose of this section is to conserve fuel during periods of current and imminent fuel shortages through the establishment of a national maximum highway speed limit.

(b) After the sixtieth day after the date of enactment of this Act, the Secretary of Transportation shall not approve any (highway) project... in any State which has (1) maximum speed limit on any public highway within its jurisdiction in excess of 55 miles per hour, and (2) a speed limit for all types of motor vehicles other than 55 miles per hour on any portion of any public highway... of four or more traffic lanes, the opposing lanes of which are physically separated by means other than striping, which... had a speed limit for all types of motor vehicles of 55 miles, or more, per hour on November 1, 1973...

(e) This section shall cease to be in effect (1) on and after the date on which the President declares that there is not a fuel shortage... or (2) on and after June 30, 1975, whichever date first occurs.

Public Law 93-643

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Federal-Aid Highway Amendments of 1974."

154. National Maximum Speed Limit

(a) the Secretary of Transportation shall not approve any (highway) project... in any state which has... a maximum speed limit on any public highway within its jurisdiction in excess of fifty-five miles per hour.

141. Enforcement

Each state shall certify to the Secretary (of Transportation) before January 1 of each year that

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it is enforcing all State laws respecting... all speed limits on public highways in accordance with section 154 (national maximum speed limits)... The Secretary shall not approve any (highway) project... in any State which has failed to certify in accordance with this section.

How A Bill Becomes A Law

HOUSE OF REPRESENTATIVES

Rep. Howard Introduces Bill
-number H.R. 11372
-referred to Public Works Committee

Public Works Committee Action
-Subcommittee on Energy holds public hearings
-amended
-reported favorably to House

Floor Action
-amended
-passed

-agrees to certain Senate amendments, revises others
-passes revised version
-presented to President

Senate

H.R. 11372 Introduced in Senate
-referred to Senate Public Works Committee

Public Works Committee Action
-Subcommittee on Tranportation holds public hearings
-amended
-reported favorably to Senate

Floor Action
-rider attached
-passed

-agrees to House revisions of Senate amendments
-passes revised bill
-presented to President

House and Senate Conference
-informal meeting
-compromise reached

PRESIDENT

-signs H.R. 11372 into Public Law 93-239

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Chronology

The 55 MPH National Maximum Speed Limit Law

1973

May	Oil shortage first felt in U.S.
June 29	President asks states to reduce speed limits.
October	Mid East oil embargo begins.
November 7	President orders 50 MPH limit for all federal vehicles.
November 8	Rep. Howard introduces H.R. 11372.
November 27	House Subcommittee on Transportation of the Public Works Committee holds hearings.
December 3	House passes H.R. 11372.
December 11	Senate Subcommittee on Transportation of the Public Works Committee holds hearings.
December 14	Senate passes an amended version of H.R. 11372.
December 21	House and Senate pass a compromise version of H.R. 11372.
December 22	H.R. 11372 signed by the Speaker of the House and the President of the Senate.

1974

January 2	H.R. 11372 signed by President and becomes P.L. 93-239.
March 3	55 MPH speed limit in effect in all 50 states.
June 30	Senator Percy introduces S. 3556 to make 55 MPH limit permanent.
September 11	Senate passes S. 3934, incorporating the permanent 55 MPH limit.
December 16	House passes different version of S. 3934.
December 17	House-Senate Conference Committee meets on S. 3934.
December 18	Compromise version of S. 3934 passes Senate and House.

1975

January 4	S. 3934 signed by President into P.L. 93-643. 55 MPH limit now permanent.

Activity 3 - Hearing Before the Subcommittee on Transportation of the Committee on Public Works, United States Senate

Purpose of the Senate Hearing

This is a roleplaying activity based on an actual hearing before the Subcommittee on Transportation of the Senate Committee on Public Works inquiring into the relationship between fuel savings and highway speed limits. The hearings permit the Senators on the Subcommittee to evaluate the merits of bill HR 11372 just passed by the House of Representatives.

After hearing all of the testimony, the Senators may make any changes they think are necessary. These changes become amendments to the House bill. The bill will then be returned to the House. There the Representatives will have an opportunity to evaluate the changes. They will vote on the amended bill, although they may also amend or change the bill. If the House amends the bill, it will be returned to the Senate for final approval. The amending process permits each house to reach agreement on the bill before it is sent to the President. No bill can be acted on by the President until it is passed by both houses in identical form.

Although the hearing is informal, the subcommittee members and witnesses must adhere to courtesy, protocol, and pay attention to time limits. While the witnesses in this Senate hearing are appearing voluntarily, this subcommittee, like all committees, has the power to subpoena people to appear as witnesses. A subpoena is a command to appear and is enforced by law.

Protocol of a Hearing

Since the purpose of the hearing is to obtain a great deal of information in a short period of time, protocol must be followed.

1. All participants must be prepared to carry out their responsibilities.
2. When the hearing is in session, everyone must respect the wishes of the Chairperson of the Subcommittee. He or she must always be addressed as Mr. Chairman during the proceedings.
3. Speakers (also called Witnesses) for and against the bill should be heard with courtesy and attention, since what they say is reported in the press and sometimes on television and therefore reaches not only the committee members, but also their constituents.
4. Witnesses will have a maximum of three minutes to present their testimony.
5. Senators will have a maximum of three minutes to question a witness.

Additional Sources of Information

Students may wish to obtain additional resource information relating to the Senate hearings. If this is the case:

a. copies of the original hearings may be obtained from any large University library or by writing to the Senate Subcommittee on Transportation.

b. material realting to the 55 MPH speed limit may be obtained from State or Federal Departments of Transportation.

c. newspaper and magazine articles from the period August-December, 1973 are listed in the Readers Guide to Periodical Literature.

d. publications dealing with the energy crisis usually discuss energy and its relationship to transportation.

e. Energy-Environment Source Book, J.M. Fowler, NSTA ($4, #471-14692); Energy-Environment Materials Guide, K.E. Mervine, R. Cawley, NSTA, ($2, #471-14694); Energy-Environment Mini-Unit Guide, S. Smith, J. Cr[illegible], J. DeRose, NSTA, ($3, #471-14696).

SENATORS INSTRUCTIONS AND PROCEDURES

Directions

Senators will meet to select a chairperson who whould be someone willing to accept the responsibility for keeping the purpose of the hearing above any personal interests. In addition, the chairperson must be able to conduct the hearings in a manner that avoids antagonism and conflict.

Each Senator should write the name of the classmate he or she chooses for chairperson on a piece of paper. Give the name to the teacher who will tally the choices and indicate the person who received a majority of votes.

The elected chairperson should read the role card for Chairperson and distribute the remaining Senator role cards to the Senators.

Each Senator should note that the Chairperson calls the hearing to order, calls the witnesses to appear, and brings the hearings to a close.

WITNESSES' INSTRUCTIONS AND PROCEDURES

Directions

This packet is for witnesses attending a public hearing on the merits of a national speed limit law. If you are one of the witnesses, you will speak for or against the speed limit according to the role you play.

Each witness will have a maximum of three minutes to present testimony. The Senators will have an opportunity to question each witness. The purpose of the questioning will be to clarify any statements made during your testimony. Answer the questions to the best of your ability, keeping in mind that you are not giving your personal opinion, but that of the person whose role you are playing.

Your group should hold a brief meeting to review the order of appearance at the hearing, and to select a witness role card.

Review the role card and prepare for your testimony.

The Chairperson of the Subcommittee will call you to testify in the following order:

Order of Appearance

1. Secretary of Transportation
2. Teamsters Union Representative
3. American Automobile Association Executive
4. Congressman from the House of Representatives Subcommittee on Energy
5. American Trucking Association Executive
6. State Highway Department Executive
7. Railroad Corporation Executive
8. Bus Company Executive
9. Independent Trucker
10. Public Interest Group Representative

SENATE STAFF AND PRESS INSTRUCTIONS AND PROCEDURES

Directions

Each Senate hearing is attended by members of the Sergeant-at-Arms staff. The Sergeant-at-Arms has the responsibility for arranging for the use of the hearing room and assisting in the maintenance of order during the hearing.

A student may volunteer to be the Sergeant-at-Arms, or the group may elect him or her.

The Sergeant-at-Arms should read the role card for this job and distribute the remaining role cards to other members of the Senate Staff and Press.

The Subcommittee Aide, the Senate Recorder, and the Sergeant-at-Arms will make sure the hearing room is prepared and all furniture supplied.

The Sergeant-at-Arms will call all participants to the hearing room at the request of the Chairperson.

The Senate Staff will clear the hearing room at the conclusion of the hearings.

Members of the Press have their duties outlined on their role cards. You may need the assistance of the teacher to arrange for audio-videotape equipment, and tape recorders.

SECRETARY OF TRANSPORTATION

Background: As Secretary of Transportation you are responsible for enforcing any laws that apply to transportation. Your department is also responsible for conducting research in all areas of transportation, and for providing information to the public.

Role: You have been invited to the hearings to present the following information:

A. The Department of Transportation is evaluating methods for reducing the amount of energy needed for highway construction.

B. Most mass transportation systems operate at 20 to 40 percent of capacity for most of the day but are pushed to peak capacities during morning and evening rush hours. Increasing the peak capacity of mass transit will require a tremendous investment of energy, time, and money.

C. A recent survey of fuel savings at lower automobile speeds has been completed. It shows the average increases in per-mile fuel use:

MPH	Percent Increase in Fuel
30-40	no increase
40-50	8%
50-60	11%
60-70	17%
50-70	31%

D. It is your belief that driving at speeds of 50 and 55 the fuel efficiencies of trucks and buses remain unchanged. At 50 MPH, with increased

AMERICAN TRUCKING ASSOCIATION EXECUTIVE

Background: You are the Vice-President of the American Trucking Associations. The A.T.A. represents all types and classes of truck operation in the country. You have been invited to testify at the Senate hearings because many truck drivers and trucking companies have announced their opposition to the proposed speed limit.

Role: You present the following points as you testify:

A. Freight terminals, relay points, and equipment interchange points have been placed in certain locations so that drivers can get from one stop to another in ten hours or less. A driver can not exceed the ten hours driving time (including rest breaks). Drivers have to take an eight hour break after driving ten hours before continuing the trip. Driving at the lower speeds a nine or ten hour trip would become an 18 or 20 hour trip.

B. Heavy-duty inter-city trucks are designed to operate efficiently at 55 or 60 miles per hour. Any reduction in the maximum speed would force truck drivers to drive the trucks in a lower gear. The trucks consume more gas in the lower gears.

C. Trucks driven at lower speeds would necessitate the use of more trucks to haul the same amount of goods that are presently being shipped. More trucks would increase fuel consumption.

wind resistance, there will be less fuel efficiency.

E. Priorities for fuel allocations to states and to various types of transportation methods will have to be evaluated very carefully.

F. Americans use an average of 17 1/2 million barrels of petroleum every day. The present shortage of fuel is approximately 2 1/2 million barrels a day.

AMERICAN AUTOMOBILE ASSOCIATION EXECUTIVE

Background: You have been the Public Relations Director for the American Automobile Association for the last seven years. The A.A.A. is a private agency which provides services for motorists who are members of the Association. You have been invited to testify at the Senate hearings because the A.A.A. is a large organization whose members will be directly affected by this legislation.

Role: You would present the following views when you testify:

A. There is some confusion about the validity of the energy crisis.
B. There is some question as to the legality of Sunday closing of service stations.
C. There is no substantial proof of fuel savings at lower highway speeds.
D. Pollution controls on automobiles have increased gasoline consumption.
E. Public hearings on this bill should be held all over the country.
F. Gasoline use varies according to the geographic region where people live.
G. There should be an attempt to encourage a 25% reduction in travel.

TEAMSTERS UNION REPRESENTATIVE

Background: You represent more than two million members of the International Brotherhood of Teamsters. The members are concerned with the decreasing supply of fuel, the increasing cost of fuel, and the legislation that would force the truck drivers to spend more time on the road.

Role: You have been asked to appear at these hearings to present the following information:

A. Truck drivers are not paid on an hourly basis. They are paid on a mileage basis (approximately 16 cents per mile). They will make less money if they are forced to drive at a slower speed.

B. Truck drivers have a tremendous investment. Tractors can cost as much as $40,000. An increase in fuel prices may force many owner-drivers out of business.

C. The standard of living in the United States depends on the efficient use of transportation systems. Any legislation which decreases an efficient operation will have a detrimental effect on the economy.

D. Although the Teamsters Union does not condone strikes or work stoppages, we do understand the frustration of a truck driver who is caught in the middle of the energy crisis.

REPRESENTATIVE FROM THE HOUSE
SUBCOMMITTEE ON ENERGY

Background: You are a Congressman and a member of the House Subcommittee that held hearings on the Emergency National Maximum Highway Speed Limit Act.

Role: You have been invited to the Senate hearings so that you can present some of the information collected by the House Subcommittee on Energy. You will testify that:

A. Fuel savings from more frequent tuning of an automobile engine are significant. The figures you have are average figures for medium sized automobiles.

	Improvement After Tune-Up	
Speed	MPG	Percent
30 MPH	2.03	10.52
40 MPH	2.44	12.92
50 MPH	1.65	9.54
60 MPH	1.73	11.04
70 MPH	2.04	15.32

B. Injuries and fatalities can be decreased dramatically at lower speeds. Fatalities per 100 accidents are less than three at speeds below 55 MPH. At speeds above 70 MPH the fatality rate doubles.

C. Having one speed limit for automobiles and another for trucks can lead to dangerous, accident-causing conditions, especially in hilly country.

STATE HIGHWAY DEPARTMENT EXECUTIVE

Background: As an official from the Highway Department of a State, you are responsible for planning and maintaining your state highway system.

Role: You have been invited to the hearings to present the following information:

A. Some states are curtailing the maintenance of their highway in order to save fuel. This has led to job layoffs and dangerously poor road conditions.

B. If all highway construction were suspended for a year, this would save approximately 150 million gallons of fuel. However, the unemployed construction workers would rise to nearly 1,300,000.

C. If highway use is reduced by 30%, this could lead to a loss of $3.25 billion dollars in highway taxes.

D. The population in the United States is growing by approximately 3,000,000 per year. We still need to expand our transportation facilities to handle this growth.

INDEPENDENT TRUCK DRIVER

Background: You are one of several hundred truck drivers who have come to Washington to protest the inequities in the allocation of fuel. Independent truck drivers had staged a roadblock at the Delaware Memorial Bridge. Many independent truck drivers are now refusing to haul any goods.

Role: You have requested an opportunity to present the following information at the hearing:

A. Independent truck drivers want a fuel ceiling price of 34.9 cents per gallon and a speed limit of 65 MPH. If we don't get these, we will have to shut down operations.

B. Trucks have tanks holding as much as 250 gallons of fuel. Some gas stations will give an independent trucker only 20 or 30 gallons but will give a company driver all he wants.

C. Independent truckers trying to get to Kennedy Stadium in Washington, D.C. were stopped by the police who said they had to have a bill of lading (a loading order). Only 100 independent truckers were able to make it to the hearings.

D. Prices of fuel have jumped from 40 cents a gallon to 75 cents a gallon in some places. We can't afford to pay those prices and stay in business.

RAILROAD CORPORATION EXECUTIVE

Background: You are the president of a large railroad company. The company has been losing money for the last ten years. Government support has kept you in business. You are attempting to make railroading a profitable business.

Role: You have been invited to testify at the hearings. You would like to present the following information:

A. In recent months, telephone calls into passenger reservation and information offices increased from 33,000 calls daily to 47,000 calls.
B. In the last three years the railroad has increased the number of passengers it carries by 30%.
C. Commuter trains and long-distance passenger trains require less energy to operate than automobiles, planes, or urban buses.
D. Encouraging increased use of passenger train service will require large investments of time and money. More importantly, beliefs about transportation systems will have to change. We can't expect these changes to happen over night.
E. The government must make sure that its fuel allocation policies do not hurt the railroads.

BUS COMPANY EXECUTIVE

Background: You are an owner of a large bus company. Your company has found it difficult to find enough fuel to keep all of its buses on the road.

Role: You have asked to appear at these hearings to present the following testimony:

A. Inter-city buses get 85 passenger miles per gallon of fuel (PMPG), compared with 48 PMPG for diesel-powered passenger trains, 40 for automobiles, and only 16 for airlines. These figures have been published by the National Science Foundation.

B. Bus service could increase 100% without any need for additional buses, but bus companies cannot make any plans to increase their services unless they can be assured that there will be enough fuel.

C. Approximately 1700 new inter-city buses are manufactured each year. That number could be increased to about 2,650.

D. City buses, which use more fuel than inter-city buses, are still more efficient than the single passenger car.

E. Bus transportation would not be affected very much by the 55 miles speed limit, other than some rearranging of drivers' schedules.

PUBLIC INTEREST GROUP REPRESENTATIVE

Background: You are a member of a group interested in transportation policies. Your group has been especially concerned with the environmental impact of the automobile.

Role: You have asked to appear at these hearings to present the following information:

A. Everyone is blaming the Arabs for the energy crisis. We have caused our own problems. We have allowed the use of the automobile to get completely out of hand.

B. We have chopped cities to pieces by building superhighways through them. We have destroyed the economy of some cities by building highways around them.

C. We have allowed Detroit to produce automobiles which are inefficient, unsafe, and fall apart in a few years.

D. We need to design automobiles that can get 40 miles per gallon: but more importantly, we need to stop the unnecessary use of the automobile.

E. We have to stop building our homes in one place, our factories in another place, and our stores in another place. We have to design our towns and cities so that people don't have to overuse their automobiles.

F. 55 MPH speed limits will help, but we must insist on long-range transportation policies to solve environmental problems caused by too many cars.

CHAIRPERSON OF THE COMMITTEE ON PUBLIC WORKS

Background: You have been invited to appear at these hearings because you are the chairperson of the Committee on Public Works. You are a Senator from a coal-producing state. The coal industry uses large amounts of gasoline and diesel fuel in mining and transporting coal. You have received few letters from constituents concerning the proposed speed limit reduction since most highways in your state already have posted speed limits below 55 MPH.

Role: You would like to present the following information in your remarks:

Note: In your opening statement you should praise the chairperson for his or her initiative in calling these hearings.

A. Everything possible should be done to conserve the nation's supply of oil.

B. Car pooling and mass transportation systems should be encouraged and expanded.

C. Highway construction requires 10,000 barrels of gasoline and 30,000 barrels of diesel fuel each day. New highway construction programs are in trouble.

D. Even if the United States achieves energy independence from foreign oil sources, we will not be able to return to unlimited use of the automobile. The days of cheap energy are over.

CHAIRPERSON OF THE SENATE
SUBCOMMITTEE ON TRANSPORTATION

Background: You are a Senator from an oil-producing state. Many of your constituents have profited from the production of gasoline and diesel fuel. Your state receives millions of dollars in tax revenues from the petroleum industries who employ thousands of people in port cities where foreign crude oil is stored. You received many letters from constituents who object to lowering highway speed limits.

Role: Your job, as Chairperson of the Senate Subcommittee on Transportation, is to conduct the hearing according to the following procedure:

A. Call the meeting to order and announce the three minute speaking rule.
B. Announce the purpose of the meeting and discuss your views concerning the legislation being considered.
C. Introduce the Chairperson of the Committee on Public Works (Subcommittee on Transportation is under the Committee on Public Works).
D. Introduce other Senators on the subcommittee who wish to make brief opening remarks.
E. Introduce each witness before they testify. Announce the name and position of the witness.
F. If you notice that a member of the subcommittee has a question for the witness, you will wait for the first opportunity - usually a pause in the

SENATOR FROM NEW ENGLAND

Background: You are a Senator from a New England state which imports most of its petroleum and has few refineries. You received many letters from constituents concerned about the shortage of heating oil and gasoline. Your state was one of the first states to reduce the maximum speed limit to 50 MPH at the President's request.

Role: You have a reputation for asking very pertinent questions. You are especially interested in the difference between the testimony of the Secretary of Transportation and representatives of the trucking industry. You may wish to ask representatives of the trucking industry about engine modifications for trucks that would make their operation more efficient at low speed.

witness' testimony - to recognize the Senator.

G. If a Senator or witness exceeds a time limit, you should announce that "we should adhere to the three minute rule."

H. Thank each witness in turn for their testimony.

I. Declare a recess if time expires before all of the witnesses have testified.

J. Adjourn the hearing.

SENATOR FROM WESTERN STATE

Background: You are a Senator from a western state where there is a great deal of open highway between towns and cities. Most goods in your state are shipped by truck. You have received letters from many constituents who are concerned about the proposed legislation to reduce highway speed. People living in your state feel they should not be penalized for the excessive use of fuel since most of the problems exist in the highly-populated eastern states.

Role: You are especially interested in the testimony of the representatives of the trucking industry. You are sympathetic with their problems, but you are concerned about the possibility of strikes that could cripple the economy of your state. You will suggest that the truckers stay on the road while solutions to the energy crisis are being discussed.

SENATOR FROM A SOUTHERN STATE

Background: You are a Senator from a southern state that depends on tourism. You have received letters from many constituents concerned about the dramatic reduction in the number of tourists visiting your state.

Role: You are particularly interested in the testimony of the American Automobile Association representative calling for a voluntary reduction in automobile travel. You feel this action will encourage people to cut back on their leisure travel. No vacationers would have a devastating effect on your states' economy. You may ask witnesses for suggestions that would reduce fuel use without reducing vacation travel.

SENATOR FROM EASTERN STATE

Background: You are a Senator from a highly-urbanized eastern state where long lines at gas stations and severe shortages of heating oil have been growing more noticeable. You received many letters from constituents urging you to find a solution to the fuel shortages.

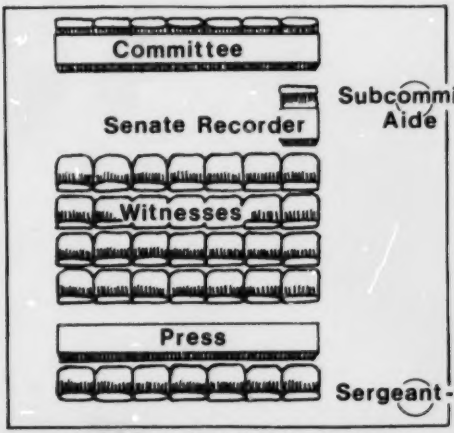
Role: You are especially interested in the testimony offered by representatives of the mass transportation industry. You would like to hear how less money for highway construction would affect mass transportation systems. You would like to know if putting money and energy into mass transportation systems would significantly reduce the nation's dependence on foreign oil.

SERGEANT AT ARMS

Role: Your responsibilities are to make sure that the meeting room is prepared for the hearings and to maintain order during the hearings.

Suggestions: You may use the diagram below to arrange the meeting room. You should obtain permission from the building principal or the custodial staff if you need additional furniture for the room.

You have the authority to ask anyone who disrupts the proceedings to leave the hearings. You should be prepared to assist committee members and the Senate Recorder in securing the materials they may need. You should be seated near the entrance to the hearing room and should not allow people to enter unless they have permission to attend the hearings.



SENATE HEARING ROOM

SENATE RECORDER

Role: It is your responsibility to keep a complete record of the proceedings. You may be asked to provide (read back) the testimony of a specific witness at the close of the hearings. You should write a summary description of the hearings.

Suggestions: You may find it convenient to use a tape recorder. You should note the time the hearing began and write down the order of the witnesses' appearance. Many tape recorders have a device similar to an odometer in a car which allows you to rewind the recording to a specific portion of the tape. You should note the number that appears as each witness begins his testimony, for handy reference. You may also wish to have a second tape recorder in case of a malfunction.

SENATE SUBCOMMITTEE AIDE

Role: Your responsibility is to act as a liaison between the Senators and the witnesses. You should:

A. Make sure the subcommittee chairperson has a list of the witnesses in order of their appearance.
B. Notify the chairperson when the witnesses are ready to testify.
C. Notify the witnesses when the chairperson is ready to begin the hearings.
D. Make sure that the room has been properly arranged for the hearing and that the Sergeant At Arms and Senate Recorder are prepared.
E. Call everyone to the hearing room.
F. Provide any information the subcommittee members may need during the hearing.
G. Arrange for a press conference at the close of the hearings.

NEWSPAPER REPORTERS

Role: It is your responsibility to keep notes on the hearings and to prepare a press release for a local newspaper at the end of the hearings. You should interview as many Senators and witnesses as possible so that you have many points of view concerning the proposed legislation. You should also meet with the Senate Subcommittee Aide to arrange a press conference. You may also wish to take several pictures before and after the hearings.

TELEVISION REPORTERS

Role: If you can arrange for the use of the school's videotape equipment, you should film portions of the hearings. You may also film a press conference if it can be arranged. The Senate Subcommittee Aide is responsible for arranging the press conference. You should indicate that you would like to attend the conference. Show your television news report to the class the day following the hearing.

Activity 4 - Does the 55 MPH Speed Limit Save Lives?

BAR GRAPH

Construct a bar graph that will show the number of vehicle miles traveled on American highways in the years 1973, 1974, 1975, using the data on the table. Put a title on your graph.

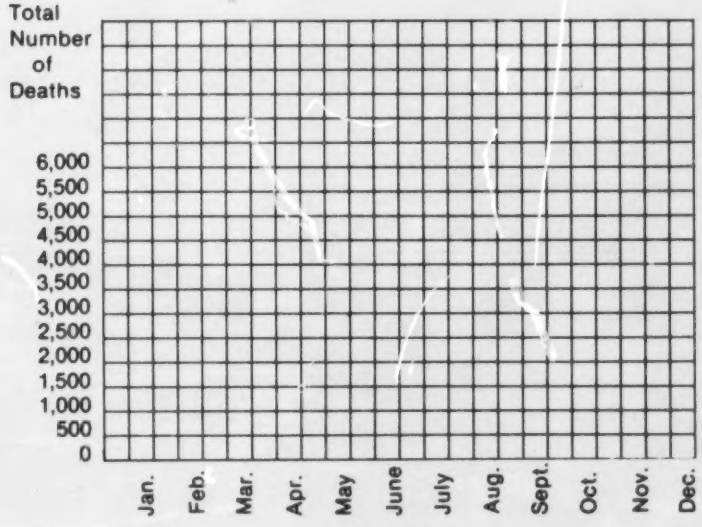
Year	Number of Vehicle Miles
1973	1,283,700 Million
1974	1,248,000 Million
1975	1,330,052 Million

What do you think accounts for the change in miles driven in 1974?

Graphs have the advantage of showing information quickly. Use the chart tabulations of the number of traffic deaths for 1973, 1974, and 1975 to make a line graph. The months should be shown on the horizontal line at the bottom, called the X axis; the total number of deaths should show on the left, called the Y axis. Use a different colored pencil for each year.

Number of Traffic Fatalities on U.S. Highways

	1973	1974	1975
Jan.	3,847	2,947	3,119
Feb.	3,524	2,679	2,865
Mar.	4,355	3,191	3,399
Apr.	4,500	3,385	3,463
May	4,801	3,763	4,025
June	5,176	4,200	4,124
July	5,186	4,330	4,537
Aug.	5,241	4,597	4,434
Sept.	4,916	4,246	4,015
Oct.	5,202	4,368	4,010
Nov.	4,401	4,161	3,911
Dec.	3,911	3,850	3,754



What conclusions can you draw about the years 1974-75?

What conclusions can you draw when you compare the number of deaths in 1973, 1974, 1975?

Using Both Graphs

What relationship do you see between the total number of miles driven and the number of highway deaths?

How does the information on both graphs help to support the conclusion made by the National Highway Safety Administration that "lowering the speed limit on the nation's highways saves lives?"

Activity 5 - State and Nation Work Together to Make a Law Work

Changing driving habits became a matter of concern for millions of Americans during the darkest days of the oil embargo, but recognizing the value of adopting lighter feet on the accelerators became less obvious once the oil started flowing again from the Middle East. With the passing of the immediate crisis many Americans began to question whether the savings at the pump was more important than power under the hood. The savings from the slow down was apparent, however, and Congress became convinced that imposing a lower speed limit would save the country more than 100,000 barrels of oil a day. For those who didn't care about saving fuel, saving it by stronger means than pursuasion became necessary. This meant enforcing the slow down by issueing tickets and fining the speeders. But who should enforce the law? Who should ticket the speeders?

While it is true that many federal laws are enforced by federal agencies - for example, U.S. Treasury agents help to enforce federal laws concerning the importation of drugs and illegal counterfeit money operations - it is equally true that we have no federal police departments. Therefore, the Committee on Public Works, which was assigned the task of considering a national speed limit law, spent a great deal of time trying to solve the problem of how to enforce the new national speed limit.

COOPERATION IS FEDERALISM

The Committee decided that the cooperation of the Governors of the fifty states would be necessary. The states, along with local police departments have traditionally set and enforced speed limits. The Committee bill provided money to make new signs. Making new signs would be costly, so it was decided that federal money should be used to help the states handle this new expense. The money would come from the federal highway funds allotted to each state.

Before the new national speed limit went into effect, however, some states had already taken measures to reduce the speed limit to 50 or 55 MPH. Maryland was one state to do this. The Governor of Maryland issued an executive order on November 14, 1973 requiring drivers in that state not to go faster than 50 MPH. According to the information on the table below, how did Maryland enforce the new speed limit?

State of Maryland		
	Number of Speeding Tickets	Minimum Fine
1974 (Jan. 1 - Dec. 31)	110,000	$25
1975 (July 29 - Dec. 31)	110,000	$20 plus $1 for each mile over posted limit

Student Questions

1. What does the table show you?

2. What is most likely the reason why the state of Maryland raised fines for speeders?

A traffic expert in the State predicted there would be 797 deaths from highway accidents in 1975. Did his prediction come true, according to the table below? How do you know? What may have accounted for this result?

Year	Highway Fatalities
1974	737
1975	691
1976	?

AGREEING TO DISAGREE IS FEDERALISM

Driving conditions and time factors are very different throughout the United States. A speed which is considered safe and reasonable in one area or region may be unsafe and unreasonable in another. Not all of the states agreed, therefore, that the new national speed limit was good law. Senator Robert Dole (R-Kan.) spoke for the residents of Kansas when he said, "A reasonable acceptable standard ought to be 60 MPH." Dole said he felt that each state should have the right to establish either 55 or 60 MPH - whichever would suit its own circumstances. He felt that midwestern and western states had the type of roads and traffic conditions that permitted 60 MPH as a safe and reasonable speed. In the Congressional Record he said:

> "...We can save more lives in Kansas at 60 MPH that east coast states because our highways are straighter, flatter, less heavily traveled, more open, and yes, safer. Why not give us the opportunity to demonstrate it?"
>
> "I still believe, as the Governor of my state believes, that what is good for New York or Massachusetts, or West Virginia is not necessarily good for Nevada, Nebraska, or Kansas. Therefore, speed limits are a matter which should be left, within at least a reasonable range of discretion, to the State legislatures."

Student Questions

3. How would a relief map of the United States help you determine if people living in Kansas might suffer real hardships under the reduced speed limit?

4. How is Senator Dole representing his constituents and looking out for their interests?

5. Which statement by Senator Dole reflects the belief that each state has the supreme power to chart its own course of action?

6. Senator Dole spoke of saving lives when he said the flat, arrow-straight roads of Kansas permitted safe driving at 60 MPH. How could he be working for the welfare of the entire nation if he would tell Kansas citizens that most automobiles get 24% more miles a goallon on highways at 50 MPH, and about 20% more at 55, than at 70?

7. If someone said to you that saving lives and energy is ultimately up to all of us, how could you explain this statement by saying that's what federalism is all about. How does a law such as the national speed limit need the cooperation of state and national governments?

Activity 6 - Does the 55 MPH Speed Limit Save Energy?

Student Questions

1. How many gallons of gasoline could be saved by driving an average car 100,000 miles at 50 mph instead of at 70 mph?

2. What are the causes of the increase in gasoline consumption as speed increases?

3. Identify some other possible benefits of lower highway speeds.

4. List some negative aspects of the 55 mph speed limit.

5. Would it be reasonable to set a speed limit of 30 mph? 40 mph?

Effect of Speed on Fuel Consumption Rates
Automobiles

Test Car Number and Net Weight (lbs.)	Miles Per Gallon At Selected Speeds				
	30	40	50	60	70
1 (4,880)	17.12	17.20	16.11	14.92	13.13
2 (3,500)	19.30	18.89	17.29	15.67	13.32
2A (3,500)	21.33	21.33	18.94	17.40	15.36
3 (3,540)	23.67	24.59	20.46	14.83	13.42
4 (3,975)	18.25	20.00	16.32	15.77	13.61
5 (2,450)	31.45	35.19	33.05	30.78	22.82
6 (3,820)	22.88	19.41	20.28	17.78	14.88
7 (3,990)	15.61	14.89	16.98	13.67	11.08
8[1] (2,050)	(24.79)	(27.22)	(26.80)	(24.11)	N.A.
9 (2,290)	21.55	20.07	19.11	17.83	16.72
10 (2,400)	22.72	21.94	22.22	21.08	17.21
11 (3,250)	18.33	19.28	15.62	14.22	12.74
12 (4,530)	20.33	20.00	17.50	16.17	14.86
Average (Unweighted)	21.05	21.07	19.49	17.51	14.93

[1]Since vehicle #8 could not be operated satisfactorily at 70 miles per hour, its miles per gallon performances were omitted from the averages. They are, however, given in parentheses.

Activity 7 - Will Slower Speeds Benefit the Environment? By How Much?

The first part of this lesson introduces you to the pollutants put into the air from the burning of gasoline. Look at the table below. Then answer the questions.

Pollutant	Pounds per 1000 gallons
Nitrogen Oxides	133
Hydrocarbons	130
Carbon Monoxide	1534

1. There were 100 billion gallons of gasoline consumed by all forms of transportation in 1976. Compute the amounts of each of the three pollutants listed in the preceding table which were released by burning this amount of gasoline, and determine by what percent they increase the national totals (shown below). Note: You will have to convert pounds per 1000 gallons to millions of tons.

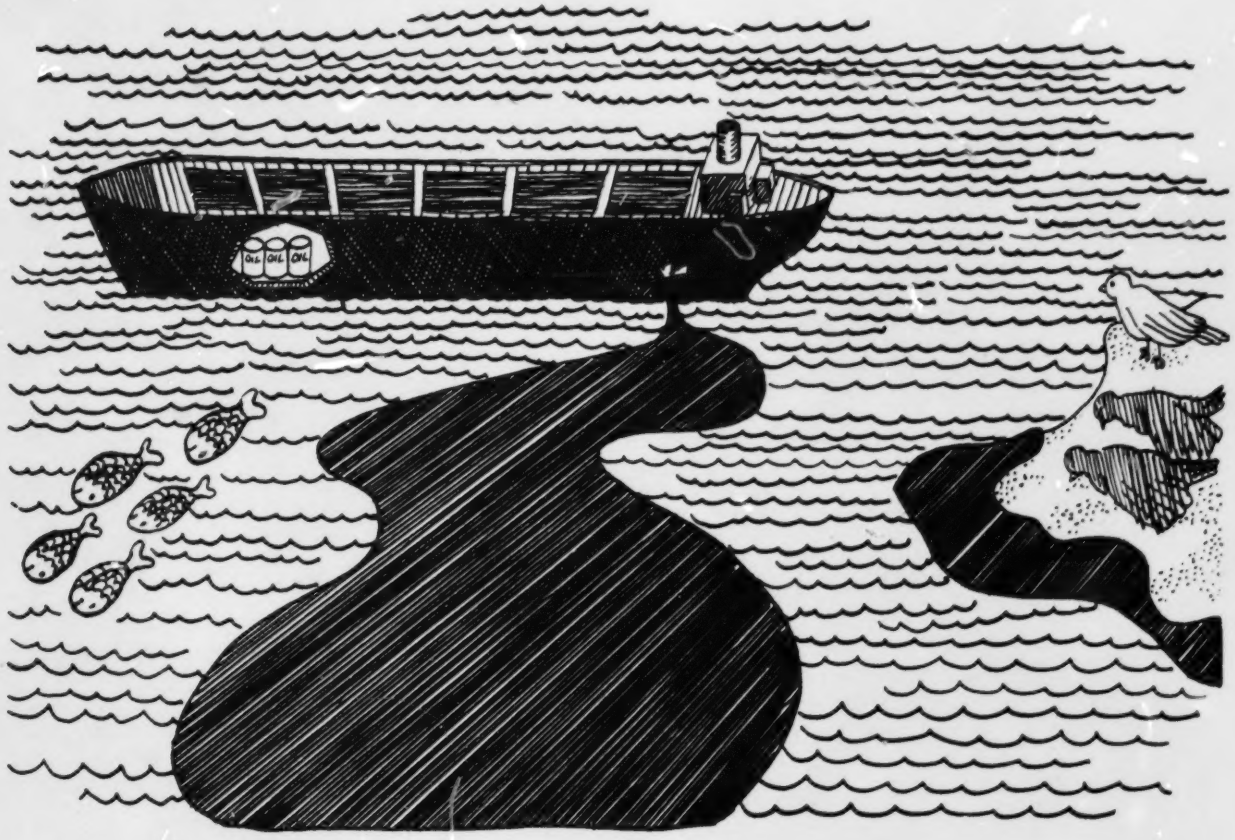
Pollutant	National Total (in millions of tons)	Addition from Gasoline (1976)	% $ Addition
Nitrogen Oxides	22.5	_____	_____
Hydrocarbons	30.4	_____	_____
Carbon Monoxide	94.6	_____	_____

2. We determined in Activity 6 of this packet that driving at 55 MPH instead of 70 MPH could save 11 million gallons of gasoline per day.

   a) How much gasoline could be saved in a year?

   b) By what percentage would this have reduced U.S. gasoline consumption in 1976? (Assume that there were no savings implied in the 1976 gasoline consumption of 100 billion gallons.)

3. How much of each of the pollutants could we have been spared if the 55 MPH limit had been rigorously observed in 1976? (Hint: Each pollutant would be reduced by the percentage calculated in Problem 2.)



Part 2 helps you to investigate the environmental effects of oil spills and the effect that gasoline conservation can have on trade deficits.

Read the information below and then answer the questions.

Gasoline is made from oil and oil is imported; most of it came by tanker. It is unfortunately true that tankers have wrecks occasionally and spill their oil into the ocean. Even more oil, however,

is discharged in routine tanker cleaning, leaking accidents, etc. In 1975, for instance, 1.65 billion tons of oil were transported across the oceans and seas of the world. Of this an estimated 1.58 million tons ended up in the ocean, 0.19 million tons of this by accidents. Thus, for every million tons of oil transported, 960 tons (on the average) ends up in the ocean, 115 tons of this by a tanker accident.

4. In problem 2, you computed the gallons of gasoline saved in one year. There are 42 gallons of gasoline in a barrel. How many barrels of gasoline would have been saved in that year?

5. Let's assume that you get a barrel of gasoline from a barrel of oil (you can get almost this amount). A barrel of oil weighs about 300 pounds. How many tons of oil would not have needed tanker shipment in 1976 if we had saved the amount of gasoline (oil) computed in problem 2?

6. The tanker Argo Merchant, which was wrecked off of Nantucket Island in the winter of 1976-77 carried 31,000 tons of oil. How many trips by tankers of Argo Merchant size could have been saved by this reduction in speed?

7. Taking the same ratio as is given in the background statement preceding problem 4, how much oil pollution would we have prevented from reaching the ocean?

8. In the wreck of the Argo Merchant off Nantucket Island in the winter of 1976-77, 31,000 tons of oil were spilled into the ocean. For each million tons of oil transported, we expect 115 tons to be spilled by an accident. In problem 5 we computed by how much we reduced total shipment by the lower speed. How much of this would we expect to have been spilled by an accident?

9. We pay about $14 to some foreign country for each barrel of oil we import. By how much could we reduce our foreign trade deficit if we saved the amount of oil we have been discussing here?

* U. S. GOVERNMENT PRINTING OFFICE : 1977 O - 244-916